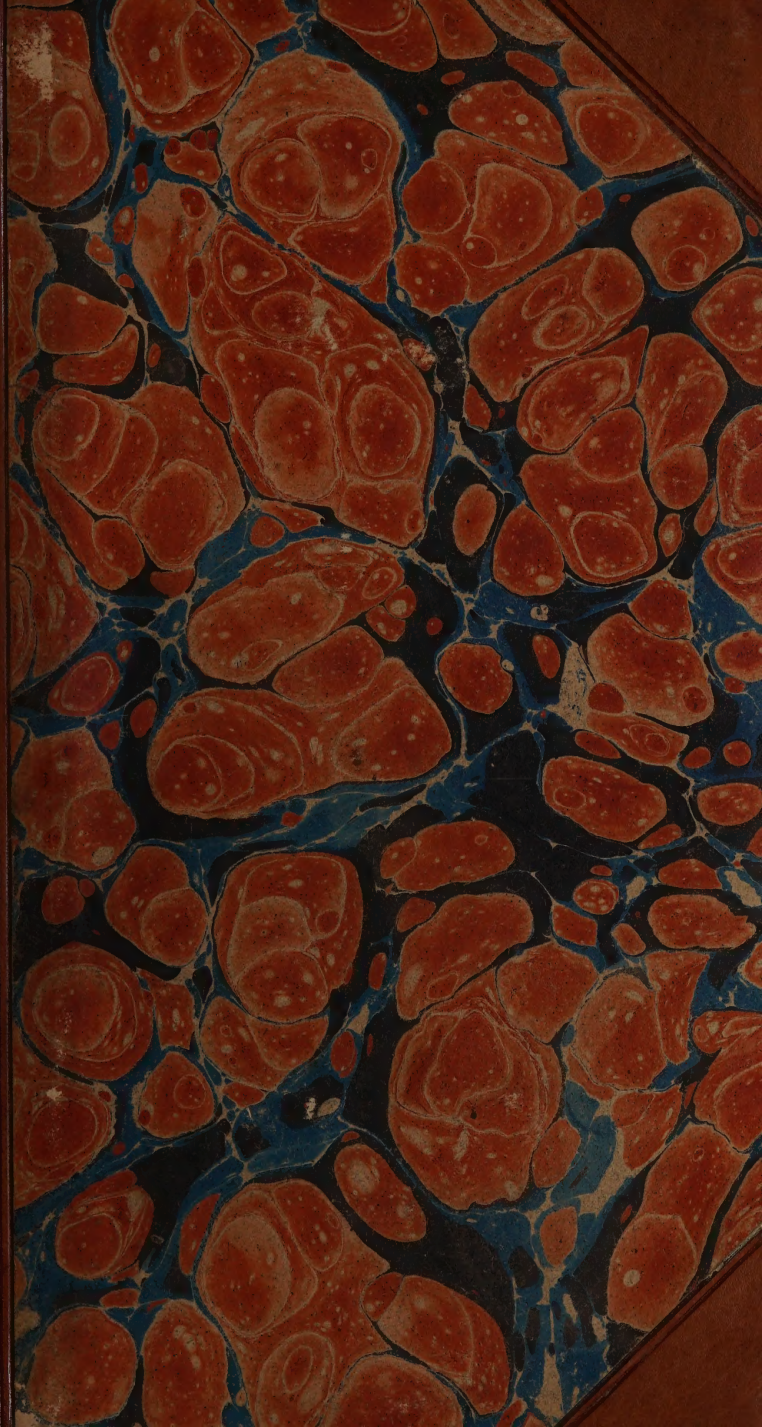




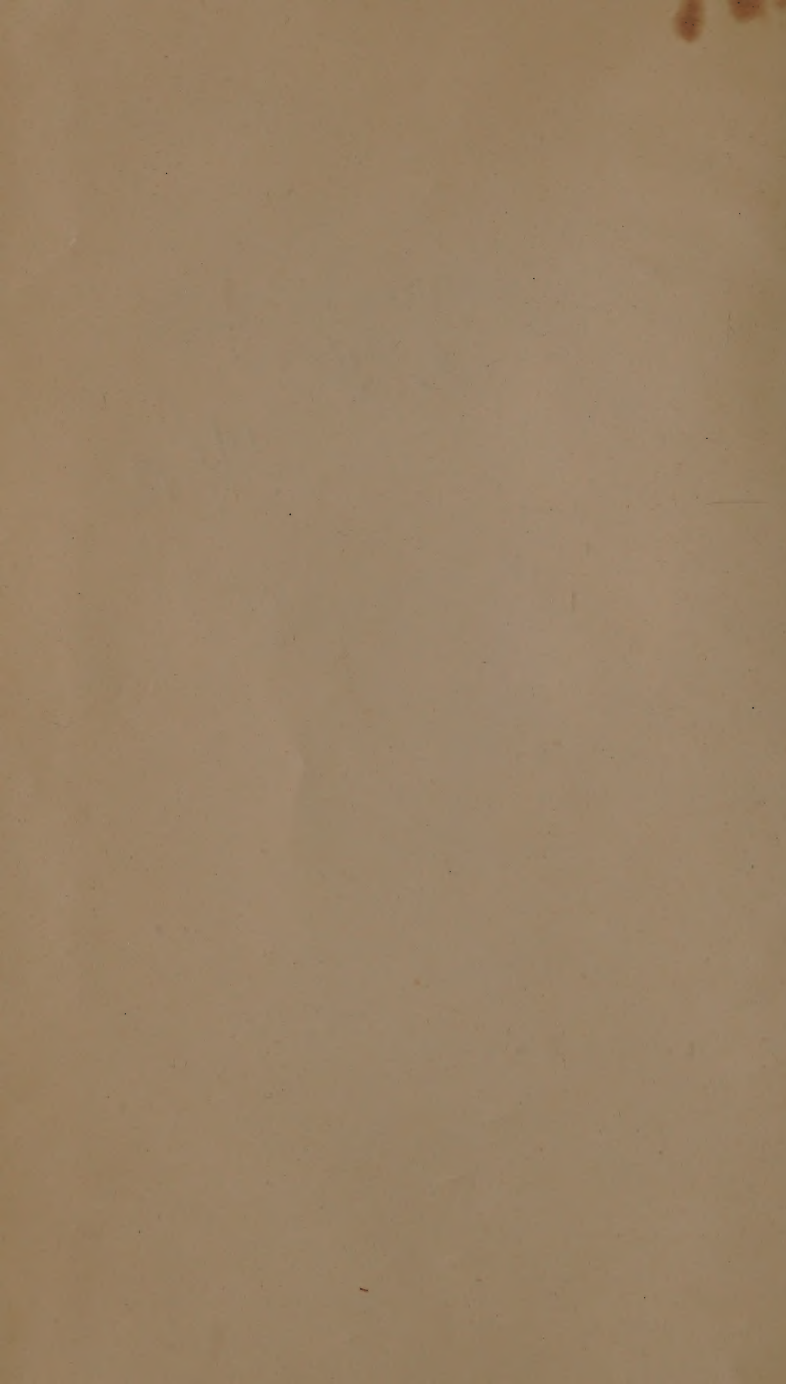
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THE HISTORY
OF
MEDICINE, SURGERY,
AND
ANATOMY.



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THE
HISTORY
OF
MEDICINE, SURGERY,
AND ANATOMY,

FROM THE
CREATION OF THE WORLD, TO THE COMMENCEMENT
OF THE NINETEENTH CENTURY.

BY WILLIAM HAMILTON, M.B.

Ut alimenta sanis corporibus Agricultura, sic sanitatem
aëgris Medicina promittit. CELSUS.

IN TWO VOLUMES.

VOL. II.

LONDON:
HENRY COLBURN AND RICHARD BENTLEY,
NEW BURLINGTON STREET.

MDCCCXXXI.



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LONDON:

G. SCHULZE, 13, POLAND STREET.

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WE at length begin to emerge from the gloomy shade of that mental eclipse which so long held the world in darkness and ignorance, retarding the progress of human improvement, and preventing the nobler faculties of the soul from attaining to their due development. The two great

events, the art of printing, and the emancipation of the human mind from the trammels of superstition through the Apostolic labours of the early reformers, by which the last century was so pre-eminently distinguished, prepared the way for the rapid advance made from this time in almost every department of human knowledge. The several branches of Medical science were not among those least benefitted by the general impulse which now began to accelerate the march of mind*.

Among the writers of this century, the first we meet worthy of notice is George Almenar, a Spanish physician, who published in 1512 a work on Syphilis, entitled "*Libellus de Morbo Gallico septem capitibus absolutus*," which was so eagerly sought after, that it underwent many impressions in a very short space of time, and has been included in the collection of treatises upon this subject published by Luisinus. Almenar appears to have had an extensive experience in this complaint, in which his chief remedies were warm bathing and mercurial frictions, with an alterative syrup exhibited on the intermediate days. He was in the habit of checking or moderating salivation by the exhibition of clysters and purgatives.

* About the year 1501, the scarlet fever made its first appearance, as is generally believed, at Naples, where it was called *Rossalia*. At least the first account of it which we find upon record, is that of Ingrassias, who has described it in his treatise "*De Tumoribus præter naturam*," Tractatus i. chap. i.

Freind, in his *History of Medicine*,* speaks of a Spanish Physician whom he calls John Almenar, who is not improbably the same of whom we have been already speaking under the name of George; and this probability derives considerable confirmation from the account given of him by Freind, who mentions his having published a work on Syphilis in the year 1516, in which he adds but little to the description previously given by Leonicensus. He approved of the use of Mercury, but employed it in the same timid manner as the Arabians; and was so far from desiring to excite salivation, that immediately on its appearance he endeavoured to check it by the exhibition of purgatives. From this striking resemblance in point of practice no less than in point of time, between these two, we may not very unreasonably conclude that they were one and the same individual, with two distinct Christian names. Early in this century Eucharius Rhodion, a physician, of Frankfort, published in German the first popular work on Midwifery, the practical rules of which were all taken from Hippocrates and other ancient writers; but, from the impossibility of following some of them, it was evident he had never practised the art; a censure equally applicable to every direction up to that time published, the whole of which tended more to mislead than inform, and to increase difficulty and danger, in place of removing them. In 1532 Rhodion's work was translated into Latin, and soon after into

* *Fr. Hist. Med.* p. 325.

French, English, and other languages. With all its defects, it continued the only manual used in England by midwives before the appearance of Chamberlen's translation of Mariceau's work, containing an account of the first material improvement in the art, made about the year 1550 by Ambrose Paré, who recommended, in all cross presentations, turning the child and bringing it away by the feet; a rule which was farther explained and extended by his pupil Guillemeau, and afterwards by Mariceau, La Motte, Peu, Puzos, and other French writers, and has since been generally adopted not only in cross presentations, but in all cases of flooding, whatever the mode of presentation, as well as in those in which the *funis* comes down first, and by some surgeons also in cases wherein at present the lever and forceps are most commonly employed.

About this time a remarkable controversy arose among the Medical practitioners in Spain and Portugal, in consequence of a deviation from the established method of bleeding in pleurisy, recommended and adopted by Peter Brissot, a French physician, who visited Portugal in 1518. Brissot was the son of a distinguished advocate who resided at Fontenai le Comte in Poitou, where Peter was born in 1478, and, having devoted a number of years to the study of Philosophy and Medicine, took his degree of Doctor in the latter faculty on the 27th of May, 1514, at the University of Paris. Being of a studious and inquisitive disposition, he carefully examined the doctrines of Hippocrates and Galen, and finding, on com-

parison with the writings of the Arabians, that these last had introduced many things not sanctioned by those great fathers of Medicine, he proceeded to restore their doctrine and practice to its original purity: for which purpose he commenced with lecturing out of Galen, in place of Avicenna, Rhazes, and Mesue, and published at his own expense a new edition of Galen's "*Opus Θεραπείας ad Glaucanem*," accompanied by a commentary of his own: he next explained Galen's work "*Περὶ τῆς τέχνης ἰατρικῆς*,"—after which he expounded the writings of John Mesue, which he mistrusted so much, either from his own ignorance of Botany, or from the great obscurity of the author's style, that he resolved upon travelling to improve himself. Previously, however, to commencing his travels, he pointed out the error which prevailed among practitioners of bleeding in cases of Pleuritis, on the side opposite to the seat of the complaint, and not upon that which is affected: this practice he demonstrated, in a public disputation, to be repugnant to reason, and contradictory to the doctrines both of Galen and Hippocrates. He then commenced his travels and, proceeding to the city of Eboræ, in Portugal, practised Physic there for some time, and broached his new doctrine of bleeding in Pleurisy, which appears from the first to have given great dissatisfaction, and to have produced a long and intemperate epistle from Denys, who was Physician to the King of Portugal. In answer to this, Brissot wrote a full justification of his innovation in practice, which, however, was

prevented from appearing by the death of its author in 1522; three years after, however, it was printed in Paris by his friend Anthony Luceus.* The dispute thus kindled between Brissot and Denys, had produced a complete civil war among the followers of Æsculapius in Portugal, and was deemed of so much importance as to be brought under discussion before the University of Salamanca, where Denys' partizans had sufficient interest to procure a decree forbidding Brissot to practice till the question was decided: after the most mature deliberation, however, and after attentively hearing all the arguments on each side, the University came to a decision, that Brissot's practice was correct, and strictly conformable to the precepts both of Hippocrates and Galen. This decision, so fatal to their hopes, and contrary to their expectations, served only to inflame Denys and his partizans the more; and declaring themselves the reverse of satisfied, they appealed against it to the Emperor Charles V. himself; Denys not only branding the doctrine of his opponent with falsehood, but denouncing it as impious and heretical, and as pernicious to the body as Luther's schism was to the soul. He accused Brissot and his adherents of ignorance and rashness, and of being downright Lutherans in practice! Although the Emperor, to whom they had appealed, came to no decision upon the case,

* It was reprinted at Basil in 1529, and again at Paris, in 1622, accompanied with a life of the author, by Renatus Moreau.

the death of Charles III. Duke of Savoy, who had been bled in an attack of Pleurisy, in the manner advocated by Denys, threw a discredit upon his cause, and greatly strengthened the party of the Brissotines.

The novelty of Syphilis and the formidable character of its symptoms continued to attract the attention of both writers and practitioners, whose works, though not always wearing the stamp of originality, contributed slowly to the accumulation of knowledge, by keeping the attention of practitioners directed to the subject, as well as by suggesting improvements in the method of treatment, or discussing the comparative merits of those most in vogue. Accordingly, we find, among the writers of this period, two who wrote expressly upon this complaint, about the year 1518, Leonard Schmaus, and John de Vigo, the latter of whom had been physician to Pope Julius II. Of these writers the former added but little to the knowledge previously acquired, beyond the mention of guaiacum, which had then been recently introduced into Europe from the West Indies, as a remedy for this complaint: the latter, however, makes many observations which appear to have escaped the attention of his predecessors. He remarks that the pustules frequently assume a livid hue on the pudenda, but acquire a florid colour as the cure advances, and afterwards spread, like warts, over the whole body; that violent pains are felt at the end of six weeks; and often, after the lapse of an entire year, virulent ulcers break out, accompanied with nodes, caries of the bones,

abscesses, and pains which chiefly affect the joints and forehead; that the disease becomes confirmed in ten, twelve, or eighteen months, and sometimes terminates in other affections. On the subject of cure he remarks, that all the remedies formerly employed were useless, and that no dependance could be placed upon anything but salivation produced by frictions with mercurial ointment, which removed the complaint completely within a week. Modern experience fully confirms the truth of this observation, and mercury is still regarded as the only remedy which can be depended upon to effect a complete cure. Adventurers have not been wanting indeed to take advantage of the popular prejudice against mercury, and turn it to their own account, by professing to cure this lamentable affliction by means of nostrums, composed of substances taken from the vegetable kingdom, and free from every particle of mercury; but either these their nostrums have proved upon trial, to be utterly inert, and to delude the patient with false hopes, while the disorder has been gaining more complete possession of the constitution, or the active constituent has been proved to be the muriate or some other salt of mercury. This, while it produces an apparent mitigation of the symptoms, or even a total subjugation of the complaint, within less time than that occupied by regular practitioners in effecting a radical cure, is only transitory in its effects, and delusive in its promises. When syphilis has once laid firm hold of the constitution, and stormed the citadel of health, the introduction of mercury into the

glandular system by means of friction, and the proof of saturation with the mineral particles by the commencement of salivation, afford, as every practitioner of experience well knows, the only certain means of expelling the invader, and restoring lost health to the impaired constitution.

John de Vigo speaks of a mercurial cerate, which he had repeatedly employed in such cases with the happiest effect; but although, in slight attacks, cutaneous absorption may be able to introduce a sufficiency of mercurial particles into the system to renovate the constitution, in old and inveterate cases the rapid and thorough saturation of the system by mercurial frictions in the region of some of the glands, will alone be found adequate to the end in view.

That distinguished anatomist, Jacobus Carpus, or more correctly speaking, Jacobus Berengarius,*

* James Berengarius was born at Carpi, in Modena, about the end of the fifteenth century; and hence, according to the custom of the age, obtained the name of Carpus, or Carpensius, by which he was most commonly known. He was initiated in the practice of Surgery by his father, who was an eminent surgeon, and studied languages and philosophy under the celebrated Albertus Minutius. He went at a proper age to Bologna, and thence to Padua, where he was for some time Professor of Anatomy. In 1518 he returned to Bologna, and was appointed Professor of Anatomy, which post he held till 1555; during which time he dissected above one hundred subjects, which, if we consider the prejudices with which he had to contend, was a large number. Indeed he was charged in that ignorant age, as Erasistratus and Herophilus had been before him, with dissecting men alive, in order to observe the motion of the intestines; and was obliged to quit Spain on account of the odium which this practice had brought upon him. This tale however, originated solely, it may be believed, in the ignorance and prejudices of a dark and superstitious age, as well as in Beren-

of whom we shall presently speak, is supposed to have been the first who introduced the practice of friction into use, and is said to have accumulated so much wealth by his success among his patients, as to have been able at his death to bequeath a sum of forty or fifty thousand scudi, about (£10,625) to his patron the Duke of Ferrara, exclusively of an immense weight of gold and silver vessels, worth perhaps as much more. Le Clerc says, he killed great numbers by his practice, but upon what authority he makes this assertion does not appear. Freind imagines that John de Vigo learned the method of curing Syphilis by mercurial friction from Berengarius, but we have already seen that the practice was at least partially adopted by Almenar some years before.

Guaiacum, which, it has been observed, was first recommended for the cure of Syphilis by Schmaus, owes its first introduction to Gonzalo Fernandez, who, having contracted this complaint at the Siege of Naples, spoken of in the last chapter, and meeting with no practitioner in

garius' known antipathy to the Spaniards; especially as we find a similar charge, substantiated by as little evidence, brought against that distinguished Anatomist Vesalius. The tale may not improbably be referred to the indignation of the clergy, whom he appears to have offended by the indecency of his conversation on the subject of his dissections, and the profligacy of his habits, which was such as to oblige him to quit Bologna. He retired to the dominions of the Duke of Ferrara, where he died about the year 1527: bequeathing, as has been mentioned in the text, his wealth, which was immense for the age, to his princely patron. His researches and discoveries in Anatomy will be noticed farther on.

Italy who understood its treatment, or was able to effect his cure, determined to seek the means of recovery in those regions from whence the malady was believed to have been imported, and embarked with this view for the West Indies, where he understood the complaint to be as common as measles and small pox in Europe.

It cannot but be regarded as a memorable fact, that the poison and its antidote should be both imported from the same place ; and, in a similar manner, the shores of those islands furnish in the leaves of the white cedar, (*Bignonia pentaphylla*) an antidote to the acrid juice of the manchineel (*Hippomane Mancinella*), which grows intermingling with it. The fact, however, of Fernandez's visit to the West Indies in quest of a remedy, at what he understood to be the fountain-head of the malady, so early as the year 1494 or 1495, within three years after the reputed introduction of the complaint, is highly important. It furnishes a confirmation of the popular opinion respecting its origin, and disproves all the fine-spun theories of those who imagine that it was known in Europe before the discovery of America. Had not the complaint been really new, can we suppose the European practitioners would have been so ignorant of its proper treatment, as to render it necessary to seek a remedy in the regions whence it is said to have been imported, and where, from the frequency of its occurrence, the inhabitants were expected to have more experience in the method of its cure ?

Fernandez, having experienced in America the salutary effects of guaiacum in counteracting the ravages of Syphilis, availed himself of this knowledge on his return to Spain, and made a rapid fortune by the cures he effected; while he secured the monopoly of the remedy by carefully guarding the secret, till revealed to the world, as has been already observed, by Leonard Schmaus, in 1518.

Among the events of importance which took place in the Medical History of the year 1518, we must not omit the foundation of the College of Physicians in London, which, however, assailed by the clamours of the ignorant, and the misrepresentations of the interested, has been productive of the most incalculable advantages, both to the practice of Medicine, and to the welfare of society. It has elevated the former to its proper rank in public estimation, and rescued the latter from the depredations of uneducated and unprincipled adventurers, who fattened upon human folly, and drew their ample revenues from the hideous mass of human infirmities. This great, this national benefit we owe to the patriotism and liberality of Thomas Linacre, an English Physician, of the time of Henry VIII.; a man no less distinguished for the extent of his talents, than for the urbanity of his manners, and the comprehensiveness of his views. This illustrious individual no less an ornament than a benefactor to his country, was born at Dover, about the year 1460, and educated at Oxford, where he was elected a fellow of All Souls' College in the year 1484, at the early age of twenty-

four, having pre-eminently distinguished himself by his talents and application. Desirous of farther improvement, and anxious to visit the classic shores of Italy, and study Virgil beneath the shade of his own Mantuan beech, he determined upon travelling, and proceeded to Florence, where he experienced the most flattering reception from Lorenzo de Medici, the distinguished patron and reviver of literature, the most learned man of his age, and the generous promoter of learning among others. Lorenzo, with his accustomed liberality, allowed Linacre to participate with his own sons in the instruction of their tutors, Demetrius Chalcondyla, and Angelo Politiano, by which he did not fail to profit to the utmost, and, under these two teachers made such progress both in Greek and Latin, that he even rivalled his masters in the accuracy of his delivery and the purity of his composition. Having thus stored his mind with a more than ordinary proportion of classical erudition, he applied himself to the study of Philosophy and Medicine ; labouring especially to make himself master of the doctrines of Aristotle and of Galen, which no Englishman had ever attempted before. In this he was so successful, that he translated several of Galen's works in the most masterly manner, and in so chaste and elegant a style, that his translation might have been mistaken for a production of the age of Augustus, and supposed to have proceeded from the pen of a Livy.

Such was the professional eminence to which he attained, that soon after his return from Italy, he was selected by that clear-sighted mo-

narch Henry VII., to superintend the health and education of Prince Arthur, and afterwards became first Physician to that King, his son Henry VIII., and the Princess Mary. But, independently of the honours deservedly lavished upon him by the court, we have substantial proof of his talents in the signal success of his practice, and in the correctness with which he predicted the sudden death of his friend Lily, in the event of his suffering himself to be over-ruled by rash men, who laboured to persuade him to consent to the excision of a malignant scrophulous humour which he had on his hip. The event fell out precisely according to Linacre's prognosis.

Such was his zeal for the improvement of his profession, that he expended the wealth he obtained by his practice, in endeavouring to promote it, and founded for this purpose two Medical lectures at Oxford, and as many at Cambridge.

But his most important foundation was that of the College of Physicians, which he was led to project from the low state of Medical Science at that period, and the multitude of incompetent pretenders, whom the facility of obtaining licences to practice, without a due preliminary inquiry into the state of their Medical knowledge, let loose upon society. In those days both the Bishop of London and the Dean of St. Paul's possessed the important privilege of examining and admitting Medical candidates to practice within their respective jurisdictions: while other bishops claimed a similar power within their several dioceses. Linacre's comprehensive mind

was not slow to detect, nor at a loss to discover the only effectual remedy for an evil so fraught with mischief to the health of the king's subjects, as well as to the honour and utility of the Medical Profession : and he accordingly suggested the foundation of a college, to be composed of men professionally capable of determining upon the qualifications of the various candidates, and the degree of their fitness to undertake the medical care of their fellow subjects.

He availed himself of the favour he enjoyed at court, and the personal friendship of Cardinal Wolsey, to accomplish his design ; and obtained accordingly letters patent from the king, on the 23rd of September, 1518, for the incorporation of the College of Physicians, with various rights, powers and immunities ; and among the rest, the exclusive privilege of admitting persons to practice, and the power of examining prescriptions. By this charter no person was to be suffered to practice Medicine in any place beyond the diocese of London, without first undergoing an examination, and obtaining letters testimonial of his qualifications from the college, except in case of being a graduate of one or other of the two Universities of Oxford or Cambridge, such graduates being already privileged to practice anywhere within the kingdom of England, except the city of London, and a circuit of seven miles' radius around it, without any bishop's licence. This charter was afterwards confirmed by act of parliament in the year 1523, in the fifteenth of the reign of Henry VIII. The immediate effect of this mea-

sure was, as Linacre had clearly foreseen, to diminish the number of practitioners, and, by rendering those who remained more select, to add to the dignity as well as the emoluments of the profession. Linacre was the first president of his own college, which office he retained for seven years, the meetings taking place at his house in Knight-Rider street, which he bequeathed to the College on his death. That event took place on the 21st of October, 1524, in the 64th year of his age; and he was buried in St. Pauls, London, where a monument was erected to his memory three years after, by the celebrated Doctor Caius.

About this time the efficacy of the China root and sarsaparilla, in the mitigation or cure of syphilitic symptoms, was made known by Aloysius Lobera, a Spaniard, who was physician to the Emperor Charles V., and who, having learned the use of these remedies in the course of his extensive travels, wrote a work on the symptoms and treatment of Syphilis. Notwithstanding its brevity, this work contains a larger proportion of valuable observations than any of the more voluminous productions of other writers. Besides the chancres, (which he regards as the most infallible proofs of infection) and other symptoms, he speaks of a relaxation of the uvula, and the swelling of the tonsils, which however never terminates in suppuration; pains, chiefly in the ancle and thighs; callosities on the hands and feet; abscesses in various parts, especially in the membranes and bones; in which case the bone itself rarely escapes becoming carious. He is the first writer who notices buboes, or observes that

when these or other tumours break, and are properly healed, the disease is eradicated. His observations on the plan of treatment are not less judicious: he explains accurately the method of conducting the mercurial frictions, directing the patient's chamber to be kept close and warm, and forbidding his linen to be changed: he continues the use of the ointment even after salivation has commenced, and until the symptoms begin to amend, but assigns no limits to the period of its continuance. He is, with the exception perhaps of Fracastorius, the first who recommended mercurial fumigation, the mode of conducting which, as well as the necessary preparation for it, he explains with the utmost perspicuity; and regards it as an admirable remedy in all inveterate cases, and in persons of a robust habit of body; but prohibits it altogether in cases of weak, or hectic patients, or such as are subject to cough, asthma, or dropsy.

The year 1527 is memorable in the annals of medicine, for having first witnessed the extravagancies of that prince of egotists and most impudent of empirics—the celebrated chemical adventurer, Paracelsus,—who succeeded, by dint of effrontery, in passing himself for a man of talent and learning, upon men who were as much his superiors in erudition as they were in ability and in modesty.

This bold empiric sprung from a family, of the greatest obscurity, in the canton of Appenzel* in

* He was born, it is said, in 1493.

Switzerland, having a considerable quickness of talent, and having been early initiated into some of the most important secrets of chemistry, formed to himself a high opinion of his own importance. Upon this foundation he commenced a sort of rambling life ; declaring, that after the most careful examination of the principles of the medical art, he found them all erroneous, and had therefore determined, after visiting the schools of France, Italy and Germany, to travel in pursuit of medical truth, searching for it not only among the learned, but even among old women, mountebanks, barbers, and quacks of every description. After passing several years in this rambling kind of manner, he succeeded in obtaining credit for an erudition which he never possessed, and for important acquisitions in science which he never made ; exhibiting a pompous display of the various countries he had visited, and the persons of celebrity with whom he had contracted, or pretended to have contracted, an intimacy. By such means he succeeded in impressing on the world an exalted opinion of his superiority ; and it must in truth be admitted, that he possessed the talent of successful and imposing charlatanry in the most eminent degree. Having had the good fortune to cure Frobonius, the celebrated typographer, at Basil, of a fit of the gout, (although it appears more than probable that he thus actually hastened his death by producing an apoplectic attack, which soon after terminated his existence) he succeeded in ingratiating himself with the learned and illustrious Erasmus, who had been the particular friend of Frobonius, and who consulted Paracelsus about his own health.

In the course of his travels he had succeeded in accumulating a considerable fund of chemical knowledge, which he converted, however, to the idle purpose of endeavouring to discover the philosopher's stone. Yet, idle as this pursuit appears, and that of the visionary elixir vitæ, which had deluded so many men of far more solid and useful abilities than Paracelsus—such endeavours were not altogether barren in their results, nor unprofitable either to chemical or medicinal science, since they not only prepared the way for those brilliant and important discoveries which have pre-eminently distinguished our own times, but led to the introduction of many valuable chemical preparations into medical practice. Paracelsus, by the bold and enterprising manner in which he administered antimony, mercury, and opium, often succeeded in effecting cures which had baffled the more cautious practice of experienced practitioners; and, as his registers of cases recorded none but those which were successful, while the more numerous catalogue of failures was consigned to oblivion, he succeeded in creating a high opinion of his practical skill, as well as of his profound erudition.

Thus his reputation at last attained to such a height, that the magistrates of Basil were induced to engage him as Professor of Medicine in that city, at a large salary; and, in consequence of this appointment, he gave, during the years 1527 and 1528, daily lectures, which at first, from their novelty and the blushless effrontery of the lecturer, attracted a numerous audience. In process of time, however, his egotism, his vanity, and his

excessive ignorance, which could not long be concealed, disgusted all the better informed among his pupils, and the number gradually diminished till, at last, not one could be found to attend him. As a proof of his ignorance and his arrogance, he commenced his very first lecture by publicly consigning to the flames the works of Galen and Avicenna, impudently declaring that his cap contained more knowledge than all the physicians, and the hair of his beard more experience than all the universities in the world. "Greeks, Romans, French, and Italians," he exclaimed, "you Avicenna, you Galen, you Rhazes, you Mesue; you Doctors of Paris, of Montpellier, of Swabia, of Misnia, of Cologne, of Vienna, and all you throughout the countries bathed by the Danube and the Rhine; and you who dwell in the islands of the sea, Athenian, Greek, Arab, and Jew! you shall all follow and obey me. I am your king; to me belongs the sceptre of physic." Such was the disgusting and vaunting manner in which he was in the habit of addressing those who had the patience to attend, and the good-nature to bear with him. His lectures were delivered sometimes in bad Latin, but more frequently in German; and, in place of conveying wholesome instruction, were filled up with groundless diatribes against his predecessors and his contemporaries, mixed with the most hyperbolical praises of himself, and the most sickening details of his merits, his erudition, and his success. Utterly unacquainted with either anatomy or rational physiology, and equally destitute of classical literature, he was unable to ap-

preciate the merits, or explain the defects of the ancients; hence he prudently confined his abuse to general terms, and cautiously avoided descending to particulars. His medical skill, of which he vaunted so much and so idly, consisted merely in the exhibition of potent remedies with that empirical boldness which scoffs at caution, and, for once that it accidentally succeeds, proves fatally destructive in hundreds of instances, which are carefully veiled from the knowledge of the world. As his theories were without system, so was his practice without judgment. His doctrines were a strange jumble of Magic and Astrology, of Geomancy and of Medicine, as destitute of method as they were for the most part of rationality; and an attempt at their analysis would be as unavailing as it would be unprofitable. With such magnificent pretensions as Paracelsus laid claim to, and so little of solidity to support them; with such a plentiful parade of promises, and so barren a harvest of performances; with so much egotism on the one hand, and so much arrogance on the other, it would have been surprising had he been able to maintain himself in that honourable post to which impudence, and not talent, had elevated him; or to continue long to profane that chair, which Bauhin had dignified by his learning, and embellished by his virtues. In 1528 he suddenly threw up his professorship in consequence of a disagreement respecting fees, and abruptly quitted Basil to embrace once more a life of wandering, improvidence, and intemperance: maintaining a kind of meteoric reputation by the occasional bril-

liancy of a few surprising cures, which dazzled the minds of men, and blinded them to those innumerable instances of failure, which ought to have taught them the madness of confiding in a practice founded upon no rational principle, and conducted upon no consistent plan.

At length, however, he furnished in his own person a practical illustration of the vanity of his pretensions, and the worthlessness of his boasts; falling a victim to an attack of fever with which he was assailed, and dying at Saltzburg in 1514, in the 48th year of his age, although possessing the secret of that invaluable elixir, by means of which he pretended to be able to renovate age, and procrastinate death to an almost indefinite period. Opium seems to have been his favourite remedy; one which, used with discretion, is capable of administering much relief, and doing extensive good; but which, in the hands of empiricism or inexperience, becomes an instrument of widely-spreading destruction, mocking the sufferer with fallacious ease, and concealing the fire which it thus renders doubly fatal. Antimonials and mercurials were likewise among the active engines with which he dealt out death to the many, and salvation to the few: and there is little doubt, that posterity owes to his chimerical pursuit of the philosopher's stone, and the elixir vitæ, the discovery of many of those valuable preparations of these metals, which at present enrich our pharmacopœias. The merit has been awarded to Paracelsus, by some, of having been the first to employ mercury in the cure of Syphilis; but he

who will refer to the commencement of the present chapter will find, either that this merit rests upon the same apocryphal grounds with his other pretensions, or should be shared with Almenar, with Vigo, with Berengarius, and with Lobera. He may, indeed, have employed this active and efficacious remedy with a temerity which would have alarmed the regular practitioner, and a success which was the result of fortune rather than of judgment; but, when we recollect that Paracelsus could not have exceeded his nineteenth year when Almenar wrote, we must pause for farther evidence before we pluck the laurel from the brows of another to decorate *his* brazen image.

Adam Bodenstein, who had been a pupil and one of the most strenuous defenders of Paracelsus, gave a fatal proof of his misplaced confidence in the doctrines and prescriptions of his master; for, learning that the town of Basil was visited by a most destructive fever, he repaired thither in 1577, armed with an invincible *Theriaca*, prepared according to a formula obtained from his master, certain of vanquishing the complaint with this omnipotent weapon, and earning the gratitude of the inhabitants by his services; instead, however, of conquering the complaint, he took the infection himself soon after his arrival, and fell a victim to its violence, with his invaluable *Theriaca* in his possession—thus furnishing a striking example of the folly of blind credulity and over-weening vanity.

About this time, several improvements were made in the practice of surgery, and especially in the operation of lithotomy, in which the descend-

ants of Germain Colot, (who has been already spoken of as having the merit of rescuing so important an operation from the hands of ignorant pretenders,) continued to maintain the celebrity acquired by their ancestor, and to sustain with applause the high rank which they held among the successful performers of this delicate operation. Laurence Colot, in particular, enjoyed the greatest reputation for skill and dexterity, having had the advantage of instruction from Germain.

He employed what is called the greater apparatus, which was invented, about the year 1525, by John de Romanis, a physician of Cremona, who communicated his invention, and the manner of using it to Marianus Sanctus, author of a work on lithotomy, published at Venice in 1535, under the title of “*Libellus aureus de lapide à vesica per incisionem extrahendo*,” in which he described the instrument and its use. Octavian de Villa, a surgeon, at Rome, who had been a pupil of Marianus, learned the use of the apparatus from him, and is supposed to have been the person by whom it was communicated to Laurence Colot, who managed it with great dexterity, and avoided those inconveniencies which have occasioned Romanis’s instrument to be superseded by one of far less complex construction, and less difficult application, invented by a French surgeon, and greatly improved upon since by our countryman, Cheselden. The chief inconvenience attending the use of Romanis’s apparatus was that of unavoidably cutting through the neck of the bladder and urethra, at the risk of producing fistula; notwithstanding which, Colot acquired

such reputation by his dexterity in using this apparatus, that he was sent for to attend patients in distant countries; and the importance of confining his practice within the limits of France, or rather of keeping him in constant attendance upon the court, became so apparent, that Henry II. appointed him, in 1550, his surgeon in ordinary, with a pension sufficient to compensate for the loss arising from giving up his foreign practice; and he was made, besides, lithotomist to the royal family, a post held after his death by three of his descendants in succession.

The year 1530 was distinguished by the appearance of the celebrated poem on Syphilis, written by that eminent physician and accomplished scholar, Hieronymus Fracastorius,* entitled "*Syphilidis, sive de Morbo Gallico*," first published in this year at Verona: a work of too much intrinsic merit, whether we regard the

* Hieronymus Fracastorius was born in 1483, at Verona, where he practised physic: such was the ardour with which he applied, and the facility with which he advanced in the acquisition of knowledge, that he became distinguished while yet a youth for the extent of his attainments and the precocity of his understanding. These procured for him universal estimation; and obtained the entire confidence of the Venetian general, whom he attended as physician in many campaigns, and only parted from him on his death in 1515, when he returned to Verona.

It was the representations of Fracastorius which occasioned the adjournment of the celebrated Council of Trent from that town, to Bologna, in consequence of the prevalence of a dangerous pestilence at the former place.

He retired in his latter days to a country seat he had near Venice, where he died of apoplexy on the 6th of August 1553, at the age of 71. He was the author of several other medical works besides his celebrated poem upon Syphilis.

chaste and classical elegance of its language, worthy of the best days of imperial Rome, the mellifluence of its versification, hardly surpassed even by the Bard of Mantua himself, the vividness and correctness of its imagery, or the importance of its precepts—to be passed without notice in a history of the progress of Medical improvement. It was admired from the first moment of its appearance by the learned and distinguished Cardinal Bembo, by Sannizarius the classic author of the "*Prædium rusticum*," and indeed by all who could be esteemed competent judges,—by whom it was compared with the Georgics of Virgil. Francastorius dedicated his Poem, which has gone through repeated editions, and been translated into French and Italian, to Cardinal Bembo, who was his particular friend, and with whom, as well as with most of the learned men of his age, he maintained a literary correspondence.

In this year Otho Brunsfels, one of the restorers and improvers of Botany, gave a valuable contribution to Medical History in his "*Catalogus illustrium medicorum*," which was followed two years after (1532) by his "*Theses seu Communes Loci totius medicinæ: etiam de usu Pharmacorum*," published at Strasburgh, and containing much valuable information: for, in addition to his profound knowledge of botany, his reputation for Medical skill was such as to occasion the following complimentary distich:—

"Te nato, defuncta fere Medicina revixit:
"Pæonii vindex nominis unus eras."

In 1534, John Francis Brancaleo, a physician of Naples, published at Rome a work on Baths which he entitled "*De Balneis, quam salubria sint, cum ad sanitatem tuendam, tum ad morbos curandos. Dialogus adversus neotericos*—" in which he strongly advocates the cause of bathing, recommending it as one of the best preservatives as well as restorers of health; defending the practice against the objections of his contemporaries upon the authority of Galen, and advising its adoption from his own experience: he strongly reprobates, however, the abuse of purgatives, which was a prevailing error in the practice of his day.

About this time also, Antonio Musa Brassavola,* a man of distinguished talents, and a most diligent investigator of the properties of Medicines both simple and compound, published his first work "*Examen omnium simplicium medicamentorum, quorum usus in publicis officinis est*," in folio, at Rome. In this publication, from the minute attention he had paid to the subject, he was able to rectify many of the errors of his teachers. He inquires into the qualities of several poisonous drugs, and their effects on animals. He mentions the anthelmintic properties of some of the preparations of Mercury, and the safety of their cautious ex-

* Brassavola studied at Ferrara under Leonicini and Manardi, two distinguished professors, but completed his studies at Paris. On his return to Ferrara, he was made physician to Hercules II. Duke of Ferrara, to whose daughter he inscribed one of his works. He died, according to Carrere, in 1554.

hibition not only to adults, but even to the tenderest infants. He speaks of having in two instances seen a cruciform cartilage in the hearts of stags. He gives a preference to the Calabrian over the Syrian Manna; and shews that calcined mercury, although then fallen into disuse, had been formerly employed in the cure of Syphilis. Freind informs us that he was the first to employ guaiacum in Syphilitic cases, in the year 1525; but this appears to be a mistake, since Freind himself expressly states but a few pages before, that the use of guaiacum was first introduced by Gonzalo Ferrand from the West Indies, about the year 1494, and spoken of by Schmaus in the work which he published on Syphilis in 1518, seven years earlier than the date he assigns to the first use of it by Brassavola.*

Brassavola again published, in 1555, "*De medi-*

* Compare—"Guaiacum primus ad nos attulit Gonsalus Ferrandus; qui, cum per obsidionem Neapolis Luem contraxisset, neque in Italia curationem experiret, in Occidentalem Indiam navigavit, eo consilio ut perquireret quatione se earum gentium populi tractarent in affectu, quem vulgarem illic ac non minus frequentem sciret esse quam Variolas inter Europæos." Fr. Hist. Med. p. 325.—the following, "opus, in quo omnia Leonicensia dicta reperiuntur, vulgavit Leonardus Schmaus; neque illic novum quicquam invenio, præter mentionem Guaiaci, in Europam paullo ante allati," ib.—and the passage respecting Brassavola at page 328 where he says, through some strange forgetfulness, when speaking of Brassavola's large work on Syphilis, "Sed utcunque longus sit, nullum recens præceptum tradit, vel de cognoscendis symptomatis, vel de instituenda curatione. Scripsit is AD. 1551, primusque Ferraræ Guaiaco usus est anno 1525." Unless this last passage be taken in a limited sense, as implying merely that he was the first to employ this remedy at Ferrara, we shall find some difficulty in reconciling the contradiction.

camentis, tam simplicibus quam compositis, quæ unicuique humori sunt propria," replete with valuable observations, chiefly founded upon his own experience, respecting the effects of different purgatives ; and he speaks in it of having cured a maniacal case in a person of rank, by the exhibition of black hellebore, a remedy which had long fallen into complete disuse. He had previously published at Leyden in 8vo. in the year 1540, "*Examen omnium Syruporum quorum publicus usus est,*" written, like other works of his, in the form of a dialogue with an Apothecary, who commences by giving a whimsical account of the manner in which he treated his wife : stating that as soon as they had retired to their chamber, he threw down a pair of *inexpressibles* on the floor, and, giving his wife a stick similar to one he kept for himself, insisted on her contending with him, as to who should have the privilege of wearing them ; and that, having gained the victory, he had resolutely maintained his authority ever after. The Doctor, after reproving his guest the Apothecary, concludes with giving him some judicious advice as to his future conduct.

After these works he published in succession, an Examination into the composition of Electuaries, Pills, Lohocs, Troches, and other preparations,—Commentaries on parts of the works of Hippocrates,—A complete list of Galen's works,—and a Treatise on Syphilis, on the use of the China root, Guaiacum, &c. &c. containing a number of curious and valuable remarks : and among the rest he notices the fact of running mercury being occa-

sionally found in the rotten bones of persons who had died of Syphilis, after having perhaps suffered too much both from the ravages of the complaint, and the clumsy practice of the physicians.*

Contemporary with Brassavola, there flourished Nicholas Massa, a native of Venice, who distinguished himself both as an able practitioner and a diligent anatomist. His work on Syphilis is one of the best of the age, founded almost wholly upon his own experience, and evincing a thorough acquaintance with his subject. His description of the symptoms which accompany this dreadful complaint, and mark it distinct from every other, is complete; but it should be remembered that the whole of the morbid train which he describes is not to be expected to occur in the same individual. The following brief enumeration of the symptoms he details may serve to give some idea of the appearance assumed by the complaint at that period:—"Hard pustules on the head and forehead: pains in the head and limbs, especially in the thighs, which increase at night; in one subject whom he dissected in 1524, he found a congestion of white pus among the muscles of the thigh; abscesses both in the thighs, and other parts; ulcers, which when seated on the penis are an infallible proof of the presence of Syphilis; nodes, painful tubercles; tumors on the joints; cracks, and scales on the hands and feet;

* "Non semel in sepulchris argentum vivum in mortuorum capitibus inveni."

a crust over the whole body as in leprosy ; relaxation of the uvula, ulcers in the mouth, fauces, and epiglottis, which do not proceed to suppuration ; erosion of the cartilages of the larynx ; caries of the bones ; buboes, which, when brought to suppurate, remove the complaint ; and a falling off of the hair of the head and the beard." His mention of this last symptom fixes the period at which he wrote, which could not have been earlier than 1536, since we learn from Fallopius, that the loss of the hair was not observed to be a symptom of the complaint before that date, when the disorder had been known for about forty years. In this catalogue of symptoms, exhibiting, it must be confessed, a sufficiently frightful picture of this loathsome complaint, one only, which is now one of the commonest attendants upon Syphilis, is wanting, namely gonorrhœa, which, as Fallopius, upon whose information we may rely, also acquaints us, did not appear during the first forty years after its introduction,—Fernelius being the first to notice it. Had such a symptom fallen under the notice of so attentive an observer as Massa, we may feel assured he would not have omitted it. His account of the plan of treatment to be pursued in the cure of Syphilis, is no less distinguished for its judgment, than his detail of symptoms for its accuracy. This novel complaint requires, he observed, to be assailed with novel remedies ; and, if not the first, he was at least among the earliest to discover and point them out. Although he dwells at considerable length on the praise of guaiacum,

he regards salivation as the only certain and effectual remedy, and conceives it may be employed with the most perfect safety both in cases of young children, and pregnant women. He gives the formulæ of many different ointments for this purpose, the basis of every one of which consists of lard and mercury. He also lays down rules for the proper preparation of the body, and for guarding against those inconveniencies which may occur either during, or after recovery. He remarks that the salivary discharge passes off occasionally not only by the gums, but also by stool, by urine, and by perspiration, and this frequently with the happiest results. He directs that the mercurial frictions should be continued for twelve, fifteen, thirty, or even thirty-seven days,* according to circumstances, either in uninterrupted succession, or with such occasional intermissions as may appear most advisable, but without regarding the languor or exhaustion of the patient. This rough and severe kind of practice is fully sufficient to account for the very untoward symptoms frequent in those days, and the numberless instances in which, from the supersaturation of the system with mercury, anatomists discovered it in a metallic and fluid state in the bones of those who had been so treated.†

Massa likewise treats of mercurial fumigations,

* Nic. Massa de Morbo Gallico. Tractatus iv. chap. 2.

† "Argentum vivum accepi ex osse cujusdam corrupto, quem perunctum ab empyricis plus decies ferebant non semel emanavisse." Anton. Gall. in libro de Ligno Sancto non permiscendo. See also the note upon Brassavola.

the efficacy of which he says he witnessed more than once. In employing this plan of cure, he adopts the same cautions as those given by Lobera, who first recommended the practice. He says he had frequently known fumigation to succeed in effecting a cure, in cases which had baffled the efforts of friction. Upon the whole Massa is the first writer who has treated the subject with the practical skill and originality of an observer. But he was not less distinguished for his skill in practice, than for his proficiency in Anatomy, which may not inaptly be termed the elder sister of practice. His "*Liber introductorius Anatomiae*," which was published in 4to. at Venice in 1536, contains many valuable observations, especially on the subject of the genital and urinary organs. He also published a collection of medical correspondence, which was printed at Venice in 4to. in 1542, and reprinted at the same place in 4to. in 1550 and 1558 : it was entitled "*Epistolæ Medicinales*."

Fernelius,* who was a contemporary with

* John Fernel, or Fernelius, was early distinguished both for his talents and application, and signalized himself so much among his fellow students in philosophy, that he was requested to undertake the professorship of dialects in his college, immediately after attaining his master's degree. Having applied himself to the study of Medicine, he took the degree of Bachelor in that faculty at Paris, in 1528, and Doctor in 1530, when he was 33 years of age. His passion for mathematics had nearly proved ruinous to his family, upon which, by the advice of his father in law, he applied himself to practice, wherein he rapidly acquired both fame and fortune. In 1542 he was made physician to the Dauphin, Henry, in which office he continued after that Prince mounted the throne, and accompanied him in all his campaigns, during one of which he composed his work on fevers, published

Massa, (having been born, as we learn from the best authorities, at Clermont, in the year 1497) and was distinguished for the boldness with which he dared to question the dogmas of Galen, almost regarded as sacred in those days,—in addition to a large collection of valuable works both on Medicine and Mathematics which he published during his life, left a valuable treatise on Syphilis, edited at Antwerp in 1579, twenty-one years after his death, by Gisselin, a physician of Bruges, under the title of “*De Luis venereæ curatione perfectissima liber.*” He there notices some changes which this complaint had undergone in the appearance of its symptoms: first in the increased efflorescence of pustules, accompanied by a diminution of pain: a little after, on the pustules almost totally disappearing, the pains became most excruciating and were accompanied with nodes; although Fracastorius in his

afterwards at Frankfort under the title of “*Febrorum curandarum methodus generalis,*” which was nearly finished when the King retook Calais from the English on the 1st of January, 1558. On his return from this expedition, he accompanied the court to Fontainbleau, where his wife died of fever. This affected him so much that he was attacked himself with the same fever twelve days after, and died on the 26th of April, 1558, at the age of sixty-two. His other medical works were “*De naturali parte Medicinæ, libri septem.*” Paris, 1532. “*De vacuandi ratione, liber.*” *ibid.* 1545. “*De abditis rerum causis, libri duo.*” *ibid.* 1548—a work which went through nearly thirty editions. “*Medicina ad Henricum II. &c.*” 1554—still more frequently reprinted. “*Therapeutices universalis, seu medendi rationis libri septem,*” Lugd. 1659, and “*Consiliorum Medicinalium liber.*” Paris, 1582. As he transferred many things from the Arabians into the chaste latinity of his own works, it was said of him that “*Fæces Arabum melle Latinitatis condidit.*”

work "*De contagionibus, et contagiosis morbis, et eorum curatione*," says that the nodes were most numerous, and the pustules fewer at the beginning. At the time, however, of his composing that work, which was shortly before his own death in 1553, the reverse had taken place, while the severity of the pains was increased; yet, in the next six years, the nodes again increased in number, while the pustula eruption diminished and the pains almost wholly disappeared. However at variance these two accounts may appear, both it is probable are strictly conformable to truth; the discrepancies arising, not only from the difference of the countries, climate, and habits of the people where the observers severally resided, but also from a variety of other causes. For it is admitted by all, that the malignity of the complaint was greater in those days than at any later period; and that it underwent great changes subsequently to the description given by Leonicensus. In the succeeding years, neither the pains nor the pustules were constant symptoms; nor, when these last occurred, did they always commence, as at first, on the pudenda. About the year 1530, as Fernelius attests, great changes took place in the symptoms, and several new ones appeared, as the loss of the hair, teeth, and nails, blindness, and gonorrhœa.

Before we finally dismiss the subject of Syphilis, it may not be amiss to remark, how little system, appears to have prevailed in the methods of treatment adopted by the different practitioners in those days. In the exhibition of guaiacum at the commencement, a most rigid course was adopted and

followed up with the most careful exactness; the patient being shut up, as it were in a cavern, to elicit perspiration, by which means, as Fallopius observes, both the man and his bones were macerated: and Fracastorius in his poem notices the same fact more metaphorically. Experiments were next successfully made, by some practitioners of judgment, on the use of mercury, both in the shape of friction and fumigation. This plan however encountered much opposition, especially from Fernelius; and even Fallopius considered the cure accomplished by mercury to be one upon which dependance could not be placed; and although he lays down the most admirable rules for conducting salivation, he advises that no one should attempt it, till after an ineffectual trial of sarsaparilla and guaiacum, which he considered the most certain remedies, if not specifics in this complaint. Indeed he speaks with so little of his usual discrimination on the subject, that he even ascribes the caries of the bones to mercurial friction, without which he asserts that it never took place. Fracastorianus, who wrote after, and frequently copied from him, observes that a cure was occasionally effected by mercurial unguents; but that, as this was a violent and hazardous method, it was prudently laid aside; although he acknowledges that, on the complaint gaining ground two years after, it was had recourse to again.

In 1539, a work on the disorders to which children are subject,* was published by Michael An-

* *Libellus de morbis puerorum*. 8vo. Venetiis, 1539.

gelo Biondi or Blondus, who had some years before given an Epitome* of some of the books of Hippocrates, and in 1542 published a surgical work† on the quickest mode of healing wounds, and on the use of guaiacum in the cure of Syphilis. For wounds recently made with a cutting instrument, he recommends the application of simple water as a most useful remedy. With respect to Syphilis he denied that it was a new complaint imported from the West Indies by Columbus, but believed it to have been known to Hippocrates, and others of the ancient physicians, and described in their works. He had employed the *lignum sanctum*‡, but without success, the complaint returning with increased violence after its discontinuance. He relied upon mercury chiefly for effecting a radical cure, but omits to explain the manner in which he employed it. Biondi was a native of Venice, where he was born in 1497, and, after studying under Augustin Niphus, a celebrated teacher, settled in practice at Naples.

Prospero Borgarucci, an Italian physician of considerable eminence, although he describes, in his "*De morbo Gallico Methodus*," the mode of employing mercury in friction, gives a preference to guaiacum, from an erroneous idea that mercury destroyed the powers of procreation. He

* Epitome ex libris Hippocratis, de nova et prisca arte mendi, deque diebus decretoriis. 8vo. Romæ, 1528—1545.

† De partibus ictu sectis citissime sanandis, et medicamento aquæ nuper invento. In plurimorum opinionem de origine morbi Gallici, deque Ligni Indici ancipiti proprietate. 8vo. Venet. 1542.

‡ Guaiacum officinale.

makes no mention of sarsaparilla, although well known at the period in which he wrote.

Respecting fumigation, which required greater skill in its management, it is not surprising that opinions should be yet more divided and uncertain. From all this the unavoidable conclusion is, that we cannot be too cautious in assenting to the opinions of medical writers upon almost any disputed point of practice; each being influenced more perhaps by attachment to some favourite theory, than a strict regard to veracity.

About this time the celebrated Cardan published his first work entitled "*De malo recentiorum Medicorum medendi usu*," Venetiis 1536, in which he severely censures the wretched practice of the majority of his contemporaries: and, a few years after, he followed this work by another entitled "*Contradicentium medicorum, libri duo*," published at Lyons in 1548, in which he exposes the contradictory and inconsistent accounts given of the same disease, both by ancient and modern writers.

Surgery in France at this period possessed her brightest gem in Ambrose Paré, a Hugonot, who was born at Laval in 1509, and commenced his career early in life as a military surgeon, in which capacity he rose, finally, to the highest distinction, having been made surgeon in ordinary to four kings of France in succession. Following the dictates of his genius, he made authority yield to observation, or endeavoured to reconcile them; whereupon envy, the unfailing attendant upon talent, represented his discoveries as crimes. He was the re-

storer, if not the inventor of the art of tying the blood vessels, which he effected by drawing them out naked, and passing a ligature over them. He improved, greatly, the method of treating gun shot wounds, by introducing soothing applications in place of the stimulant ones customary with his contemporaries. His first work "*Manière de traiter les playes faites par harquebuses, flèches, &c.*" appeared at Paris in 1545; and in 1561 he published the first collection of all his works, consisting of twenty-six treatises on almost every branch of Surgery, in folio. During the dreadful massacre of St. Bartholomew's, he owed his escape to his talents; which Charles IX prized so highly that he personally interfered for his protection. "Il
 " n'en voulut jamais sauver aucun" (says Brantome) si non maistre Ambrose Paré, son premier
 " chirurgien, et le premier de la chrétieneté; et
 " l'envoya querir et venir le soir dans sa chambre
 " et garderobe, lui commandant de n'en bouger; et
 " disait qu'il n'était raisonnable qu'un qui pouvait
 " servir à tout un petit monde, feust ainsi mas-
 " sacré." Paré died in 1590, at the age of 81.

Rousset, a contemporary of Paré, was a strenuous advocate for the Cæsarean operation, which Paré, who had greatly improved the practice of midwifery, thought allowable only in cases where the mother died undelivered, conceiving it too dangerous for trial on a living female. Rousset, however, having collected eight cases, published in 1551—" *Traité
 " nouveau de l'Hysteromotokie, ou Enfantement
 " Césarien, qui est l'extraction de l'enfant par in-
 " cision latérale du ventre et de la matrice de la*

*“ femme grosse, ne pouvant autrement accoucher ;
“ et ce sans préjudicier à la vie de l’une et de
“ l’autre, ni empêcher la fécondité naturelle
“ après.”*

Among the bold empirics of the sixteenth century, Bovius deservedly claims a place upon even higher grounds than Paracelsus; being not only descended from an ancient and noble family in Italy, but having both learning and talents to support his pretensions. This extraordinary man, who was perhaps more romantic than knavish, and more insane than either, assumed the fanciful name of Zephirieleme, from a tutelar spirit, which, as he fancied or pretended, watched over, and guarded him. Though his learning was universal, his favourite pursuits were law, medicine and chemistry, as being, we may presume from their mysterious nature, best suited to his visionary turn of disposition. He was the determined foe of all the regular practitioners, and boasted largely of the success of his own practice. Among other absurdities he contrived an elaborate and, as he called it, concentrated preparation of mercury and gold, dissolved in a kind of aqua regia, or nitro-muriatic acid, which he termed his Hercules, and pretended to cure with it malignant fevers, syphilis, and plague itself, in all their worst forms. He found fault with the ordinary method of making the decoction of the woods, as attended with the dissipation of all their volatile and active constituents. For the cure of Epilepsy he employed a preparation of ammonia; and, for the removal of amenorrhœa, he gave hellebore. He boasts of

having expelled from one of his patients a tape worm, measuring, as he assures us, fifty yards. Being an astrologer as well as physician, he condemned bleeding, except under certain favourable aspects of the heavens. He pretended to perform the most miraculous cures with his potable gold ; and turned Capivaccius into the most complete ridicule, for having given a patient over as incurable, whom he had afterwards restored to health. He was strongly attached to the study of alchemy, from the hope no doubt of discovering those two great desiderata which led the wisest men astray for so many ages, the elixir vitæ, and the philosopher's stone, which was to convert every baser metal to gold. He admitted that he was indebted to the works of Arnaud de Villeneuve for much of his knowledge, especially in chemistry. He boasts of having cured above seven thousand patients ; but Claudius Gellus, who undertook to confute him in a small tract since subjoined to his works, not only shews that he had no real pretensions to the character of a physician, but that he was even very little consulted. His chemical knowledge, however, enabled him to detect the true cause of a complaint affecting the inmates of a certain monastery, which had long baffled discovery, and which proceeded, as Bovius clearly pointed out, from the use of ill-tinned copper vessels in their kitchen. This is a frequent source of illness in families, and often exists for a length of time without being suspected ; and, as the tinning of the copper is not always perfect, and perpetually liable to abrasion,

vessels of this description should be proscribed by all who value health.

In 1556 the celebrated Dr. John Caius, one of the brightest ornaments of his age and country, published his account of the fatally destructive epidemic of which an account has been already given in the preceding chapter under the name of "*Sudor Anglicanus*" or the Sweating Sickness; but which Dr. Caius, with nicer discernment, denominated the "*Ephemera Britannica*,"* and described with such minute and scientific accuracy, that his work, however defective in its practical parts, has been repeatedly reprinted for the sake of its descriptive portion. The author of this work was born at Norwich on the 5th of Oct. 1510, and, having received his school education in his native town, was admitted a member of Gonville Hall, Cambridge, on the 12th of Sept. 1529, and elected a fellow of that Society, four years after, when he had only attained his 23d year. Anxious to extend his sphere of knowledge, he determined upon farther improving himself by travel, and by passing some time at the University of Padua, which was at that time in high repute throughout Europe, especially for the study of Medicine. Here he

* Besides this work and various translations from the Greek, Dr. Caius published, in 1570, a treatise "*De canibus Britannicis*" which Pennant has inserted entire in his British Zoology; to this were added "*Historiæ rariorum animalium*," originally printed in Gesner's collection; also "*De libris propriis*," and "*De Antiquitate Academiæ Cantabrigiæ*," and it would appear from the numerous unpublished MSS. which he left behind, that he had projected a variety of other works.

placed himself under the tuition of the celebrated John Baptista Montanus, who had that distinguished Anatomist Vesalius for his pupil at the same time. Here Caius manifested the extent of the progress which he made both in classical learning, and in Anatomy and Medicine, by his various translations and commentaries upon different parts of Hippocrates and Galen, Scribonius Largus, and other ancient writers—correcting the errors of the transcribers, and explaining the more difficult passages. With a view to hear other professors, and examine rare MSS., he proceeded from Padua to visit most of the principal cities in Italy, and passed some time at Bologna, where he took the degree of Doctor of Medicine in 1541; after which he returned to Padua, and, in conjunction with Realdus Columbus, read a course of lectures on the Greek text of Aristotle. He returned to England in 1544, and, after reading anatomical lectures for some time to the Corporation of Surgeons in London, went to practice at Shrewsbury, where he was resident in the year 1551, when the Sweating Sickness returned for the fifth time, and was particularly destructive in that district, as has been already observed. It was this visitation that formed the subject of his book, in which his description represents it as resembling the account we have of the memorable plague at Athens. In 1547 Caius was admitted a fellow of the College of Physicians, and appointed in succession Physician to Edward VI. and Queens Mary and Elizabeth. He was a strenuous friend to the College of Physicians, of which he was elected President, and continued in

that office for seven years, in the course of which he revised their laws, appointed insignia for the president, and, in order to promote the study of Anatomy, which he felt to be the corner stone of Medicine and Surgery, obtained an annual grant of the bodies of criminals for dissection under the direction of the College. He also drew up the annals of the College in Latin, together with a Journal of their proceedings, which he left with them. Feeling a strong attachment for the spot of his early education, and being doubtless ambitious to connect his name indissolubly with learning in England, he obtained permission from Queen Mary to erect his old Hall into a College, with an addition to its foundation of three fellows and twenty scholars. Besides this, he added an entirely new quadrangle to the original Hall, and erected three gates at a total cost of £1,834. In consequence of this munificence the new College was named, after its Benefactors and Founders, Caius and Gonville College, and Caius himself elected the first Master, which office he retained till shortly before his death, when he resigned it to Dr. Legge; continuing, however, a resident in the rank of a fellow commoner. During the illness which terminated his active and useful life, he was supported entirely by woman's milk, till he at length closed his eyes in death at the age of 63, in the year 1578—his tomb-stone bearing the simple, emphatic, yet unpretending inscription—"Fui Caius."

While the science of Medicine was thus making considerable progress towards improvement, and

gradually emancipating itself from those shackles in which ignorance and a blind attachment to the dogmata and even to the most palpable errors of the ancients, had too long held it enthralled ; the twin science of Surgery was not prosecuted with less success, nor distinguished by a smaller share of improvement. In 1560 an excellent Manual on the treatment of gun-shot wounds was published at Venice in 8vo. under the title of “ *De curandis vulneribus sclopettorum*,” by Leonard Botallus, an eminent physician and surgeon of this period, who had been a pupil of the distinguished Fallopius in Anatomy, and studied surgery practically under his brother in the camp of the Prince of Orange, whom he cured of a wound in which the carotid artery had been injured. He took the degree of Doctor of Medicine at Padua. Botallus’ Manual went through a considerable number of editions, and long maintained the reputation of being the best treatise on the subject. Five years after, Botallus published another work * in which he lays down precise rules for the conduct of the Physician and Apothecary in their attendance upon the sick ; a work containing some good practical observations, and useful suggestions. But the work by which he is best known, and which produced a most important revolution in practice, was his treatise on Bleeding ; † a custom which, although

* “ *Commentarii duo, alter de medici, alter de ægroti munere.*” Lyons, 8vo. 1565.

† “ *De curatione per sanguinis missionem, de incidendæ venæ, cutis scarifiandæ, et hirudinum affingendarum modo.*” 8vo. Antwerp, 1583.

now actually fallen into disuse, in his day was much too sparingly employed. Attempts, indeed, were made, upon almost every possible occasion, to supersede it by the exhibition of purgatives, and, where practitioners found themselves compelled to have recourse to it, they either took an insufficient quantity of blood at one operation, or neglected to repeat it as often or as fully as the urgency of the case required. The evils of this mode of proceeding soon became obvious to the experienced eye of Botallus, who, by pursuing a very different method was more uniformly successful than any of his contemporaries, and was thence induced to make his plan known for the general benefit. He mentions having employed venesection with the most decided advantage in a multitude of instances, both in Diarrhœa, Dysentery, Fever, Plague—and even Pregnancy, in which it was all but actually prohibited.

Encouraged by the signal success which crowned his practice, Botallus indulged himself in a bolder use of his lancet, and has left cases on record in which he carried the operation even beyond the sixteenth repetition, not only without inconvenience, but with the most marked advantage. He even advised bleeding in quartans, and in dropsies; and there can indeed be little doubt that in the inflammatory stage of almost any disorder, the judicious abstraction of a portion of the vital stream may be productive of the most decided benefit, and even arrest at once the progress of the complaint. On the subject of venesection, however, more will be said when we come to the

improvements made in practice by our illustrious countryman, Cullen. Such was the reputation which Botallus deservedly acquired by this successful innovation in the established practice, that he rapidly made proselytes to his plan, who, rushing with all the zealous indiscretion of new converts into the opposite extreme, carried the practice of depletion, in France and Spain especially, to such imprudent and often dangerous excess, as to bring it at length into considerable disrepute. This eventually awakened the keen ridicule of Le Sage, whose display of the absurdity, in the character of Doctor Sangrado, in his facetious history of the Adventures of Gil Blas, succeeded in bringing the practice within its legitimate bounds, and preventing its total disgrace through the indiscretion of its friends.*

In the same year with Botallus' Treatise on gun-shot wounds appeared a Manual of Surgery † by Anthony Chaumette, a native of Puy on the banks of the Loire, where he practiced his profession with great reputation. To this work was subjoined a plan of cure in cases of Syphilis, consisting in mercurial frictions, by which he says, contrary to the opinion of Fernelius, Fal-

* Botallus, by way of improving upon the ancient plan of amputation, which appeared to him too tedious, proposed substituting an instrument constructed on the principle of the guillotine, which would undoubtedly have possessed the recommendation of celerity, but unfortunately splintered and injured the bone so much, that it soon fell into disuse.

† Enchyridion Chirurgicum externorum morborum remedia, cum universalialia, tum particularia, brevissime complectens. Quibus morbi venerei curandi methodus probatissima accessit. Paris, 1560.

lopius, and others, a cure may be accomplished after the failure of all other means. Such was the popularity of this Manual, that, in about thirty years after its first publication, editions had appeared in almost every country of Europe.

In the year 1580, Horace Augenio, of Monte Sancto, in Ancona, who filled a medical professorship at Rome, in a work* published at Venice, recommended the use of millepedes in Calculus; having, he says, seen a boy cured by them, after having been condemned to undergo an operation. He condemned the practice of injecting the bladder, as frequently injurious. He exhibited water in which mercury had been boiled, as an anthelmintic, and employed narcotics, as he says, with advantage in Diabetes.

In a work† published by Marsilius Caguatus, in 1581, and consisting chiefly of critical observations on the works of the ancients, we find a singular case recorded as having fallen under the author's personal observation, of the bones of a human foetus voided by the anus, either in consequence of extra-uterine conception, or having worked their way out of the uterus into the intestines. Marsilius also maintained in another work,‡ in opposition to the opinion of some anatomists, that the *ossa pubis* do not separate

* Epistolæ et Consultationes Medicæ. Fol. Venetiis, 1580.

† Variarum observationum libri duo, cum disputatione de ordine ciborum, libri quatuor. Romæ, 1581. 8vo.

‡ De morte, causa partus.

in parturition: while in another work,* on the subject of two epidemics which prevailed in Rome during the years 1591 and 1593, he labours to prove, contrary to the universally received opinion, and, indeed, we might also say, to universal experience, that the atmosphere of modern Rome is more healthy than that of the ancient city, and that the inhabitants frequently attain to a great age: he also adds that he never knew an epidemic result from any of the frequent inundations of the Tiber.

Among the other extraordinary events connected with the Medical and Surgical history of the sixteenth century, we have to record one which, were it not for the high authority on which it rests, might well be accounted incredible, and, even as it is, must be admitted to partake almost of the miraculous; so wholly at variance is it with all ordinary experience and preconceived opinions. This event is no other than the delivery of a woman residing at Sens, in Champagne, of a *petrified child* which was taken from her by the Cæsarian operation, in the year 1582. This fact, paradoxical as it may appear, rests upon no less authority than that of Bartholine, Paré, Licetus, and others of the most unquestionable veracity, who strongly attest its truth. It was universally believed to have lain in the maternal uterus for 20 years before she had courage to undergo the only

* “De aëris Romani salubritate, de Tiberis inundatione, et de Epidemia Romana, sive de populari ægritudine quæ anno 1591, et de altera quæ anno 1593 orta est.” Romæ, 1599, 4to.

operation by which she could have been relieved from so unnatural a burthen, and, after having been cut out, was carried from Sens to Paris, where it was purchased by a goldsmith, from Venice, who sold it for a large sum to Frederick III King of Denmark, by whom it was added to his collection of rarities, where it may, perhaps, yet be seen,—at least it was in existence there not many years since. That it really is a human foetus, and not an artificial preparation, made to impose upon the credulous, is evident, as we are informed by those who have seen it, to the eye of any observer. Its upper part is found to be composed of a substance resembling gypsum: the lower part is said to be much harder, the thighs and posteriors being perfect stone, of a reddish colour: its grain and surface perfectly resembling that of human calculi. How to account for this singular deviation from the ordinary laws of nature in a clear, explicit, and philosophic manner might be difficult, although not more so, perhaps, than to account for many other operations which are equally marvellous, but which, from falling more frequently under our observation, have ceased to be regarded with surprise. We know that the basis of the bones, in all created beings, is an earthy substance, which, experience tells us, may, by the action of disease, or the freak of nature, be deposited in parts for which it was not originally designed; as when ossification of the vessels connected with the heart produces angina pectoris, and chalky concretions form on gouty joints. The same irregularity of action which was capable of

producing the deposition of earthy matter in the muscular or tendinous fabric of the mother, in place of the bones, can be easily understood to be capable of converting the whole of the foetus, while yet unborn, into a substance such as that of which the present *lusus* was composed; and it would be most unphilosophical, as well as impious, to deny the possibility of a fact so repeatedly attested, merely from our inability to comprehend the mode in which the Great Creator of all thought proper to effect it. To the simple child of nature, whose wanderings have never transgressed the limits of the tropics, or ascended into the regions of perpetual congelation, or to the unlettered inhabitant of the frozen regions bordering upon the pole—the consolidation of the liquid stream into a substance rivalling in solidity the firmest rock, and the flight of fish above the surface of the deep, are phenomena far surpassing in point of credibility the lithification of the foetus—and yet both of these are phenomena familiar to every traveller, and intelligible to every tyro in philosophy. We are, unfortunately, left in the dark as to the constitutional habits of the mother, but when we know a mode by which, although somewhat out of the common course of nature, the change from an organized to an inorganic substance is capable of being effected, we should only expose our ignorance by denying or disputing a fact which rests for its support upon such authorities as Bartholine and Paré.

Among the improvements in surgery during this century we should not omit the invention of an

instrument by Ferrius Alphonsus, a physician of Naples, for extracting balls and other foreign substances from wounds. It consisted of three branches, separating elastically, but admitting of being confined by a ring pushed forward upon them. It was to be introduced into the wound in its closed state, the ring then drawn back to enable it to lay hold of the substance, pushed forward again to close upon it, and withdrawn. It was named, after its inventor, the Alphonsin.

About this time also William Clowes, an English surgeon of eminence, who had served in the royal navy, and settling afterwards in London, was elected surgeon to Christ's and St. Bartholomew's Hospitals, published a book on Syphilis,* in which he complains much of the rapid increase of this formidable malady. He had himself cured at St. Bartholomew's alone upwards of a thousand patients, or above 200 annually, in the course of five years. His plan of cure consisted in the use of mercurial friction, and the occasional exhibition of Turbith mineral,† or mercurius diaphoreticus, of which he speaks in terms of high commendation. Having been ordered to attend, in his professional capacity, the Earl of Leicester's army, in the Low Countries, he acquired considerable experience in the practice of military surgery, and, in consequence, published the result of his acqui-

* A brief and necessary treatise, touching the cure of the disease now usually called Lues Venerea. Lond. 1585.

† A sulphate of mercury, formerly in much repute among practitioners, but long since almost wholly excluded from practice, on account of the great uncertainty of its composition, and the occasional violence of its operation

sitions in this new field of practice, soon after his return to England, in a work* on Gun shot Wounds, and other military injuries. It was the result of much practice and observation, illustrated by observations taken from the most approved writers, and containing the whole of what was known at that time upon the subject. In his treatment of gun-shot wounds, and punctures of the nerves, he recommends what he, no doubt, considered as emollient and soothing applications, but what can hardly be considered deserving of such an appellation in the improved system of the present day: his method, must, however, be admitted to have been a very material improvement upon the practice of his time. He describes a case of fracture of the skull, in which he employed the trephine with success; and one of compound fracture of the leg, which he cured without amputation. In short, there are few practitioners more eminently deserving the title of restorers and improvers of surgery, during the sixteenth century, than our countryman, William Clowes. In 1591, he republished this work, which had obtained for him great and deserved credit, with the addition of Almenar's Treatise on Syphilis, and a collection of surgical aphorisms, in Latin and English, gleaned, as he tells us, from some old works on surgery. Clowes was a rational practitioner, possessing an enlarged and intelligent mind, cultivated by study, and improved by experience. He held quacks and impostors of every description in the most sovereign

* An approved practice for all young chirurgeons, concerning burnings made with gunpowder, and wounds made with gunshot, halbert, pike, lance, &c. Lond. 1588.

contempt—such especially as pretended to effect cures by the aid of charms ; and he relates a laughable story of the trial of an old woman for witchcraft, who had imposed a belief upon the ignorant that she could vanquish disease by the agency of familiars. The judges, more enlightened than was usual in those days of superstition, seeing, at once, the ignorance as well as the malice of her persecutors, promised her liberation on the condition of divulging her charm. It consisted in the unintelligible mutter of the following couplets, after the receipt of her fee, which consisted of a loaf of bread and a penny :—

My loaf in my lap,
My penny in my purse,
Thou art never the better,
And I am never the worse.

Absurd as such impostures are found to be when once detected, and impotent as they prove after their real character has been divulged, yet the veriest nonsense becomes omnipotent when clothed in the garb of mystery, and more than half the success of a cure depends upon the patient's ignorance of the true nature of the remedy employed for his restoration. The power of imagination has been frequently fatal to persons in the most perfect health ; and the belief in the existence of supernatural agency is not unfrequently as mischievous as the reality could prove, especially when suffered to operate upon the minds of the ignorant and unreflecting. Even the lessons of philosophy are not always sufficient to preserve those who have imbibed them from the delusions of imagination. The illustrious Swammerdam

furnished, almost in our own days, a striking and melancholy example of this mental hallucination, accompanying an understanding sound in every other respect, and talents of the very first order. Hence, trifling as the anecdote of the simple witch and her besotted persecutors may appear, and unworthy as it may be deemed of a place in a work of professional respectability, the exposure of such impostures, by holding their puerility up to public view, was highly meritorious in the days of Clowes, and may not be altogether without its use, even in the nineteenth century.

In the year 1596, Hippolitus Bosc, a professor of anatomy and medicine, at Ferrara, contributed to the stock of surgical knowledge by a valuable work on Gun-shot Wounds,* in which he ascribes the chief mischief to the heat of the ball, and not to the contusion of the wound. He also wrote two other works on surgery which were of minor importance, and eight Lectures on Anatomy.† A namesake, and possibly relation of his, of the name of Ignatius Bosc, or Boscius, published at Ingoldstadt a Treatise‡ on the subject of the formation of calculi in the human body, especially in the bladder and kidneys, and the best methods of extracting them.

Francis Citois, or Citesius, as he chose to call

* De vulneribus à bellico fulmine illatis. 4to. Ferrara, 1596.

† De facultate anatomica lectiones viii, cum quibusdam observationibus. 4to. 1600.

‡ De lapidibus qui nascuntur in corpore humano, ac præcipue renibus et vesica, et ipsorum curatione. 4to. Ingoldst. 1580.

himself, took his degree of doctor of Medicine at Montpellier, in the year 1596, and attained a considerable degree of celebrity in practice, especially by his method of treating that melancholy affection which results from the absorption of lead into the system; which he was the first to distinguish by the name of *colica pictorum*, or the painter's colic, from its frequency among persons of that trade; and which he made the subject of a dissertation, exhibiting more practical knowledge than was usual at this time. He appears to have regarded the complaint as one of recent origin, and to have been of opinion that it first made its appearance in 1572; or, at least, that it then assumed a novel and aggravated character, and was accompanied by symptoms unknown, or, at least, unnoticed before—especially paralysis of the extremities. Had he, however, referred to the writings of Paulus Ægineta,* or of Avicenna, and some other of the Arabian physicians, among the ancients, or those of John of Gaddesden,† Fernelius, Hallerius, Forestus, &c., among those nearer to his own time, he would have found, that the termination in paralysis of the limbs had been noticed long before. This complaint was epidemic to a great extent in Poitou, in 1572, but had been known in Picardy, and other parts of France, much earlier. Among other cases recorded in this work is that of a girl of twelve years of age, who, after an illness which reduced her greatly, lost both the inclination and the power of taking food;

* Cap. 18, de resolutione ex colico morbo oborta.

† Rosa Anglica, cap. 30.

and had continued in that state for the three years preceding the publication of his account. This appeared to be so highly improbable a story, that it encountered a strong opposition; in consequence of which he published a second account* of this prodigy in 1602, in which, to justify his belief in the tale, he added a variety of unaccountable stories of long abstinence both of men and beasts. However, after all his pains to establish the veracity of the girl's story, her case proved, eventually, like that of Anne Moore, the fasting woman of Tetbury, in our own days, a complete imposture; the girl, on being removed from her mother, taking at first milk, after that broth, and coming at last to the use of solids like other people.—A few years after this, he published a work† on the advantages of bleeding and purging, in which he defends the practice in variola and inflammatory fevers. In these complaints he ordered a repetition of the venesection to the fourth or fifth time.

Citois at length retired from practice in Paris, and went to reside at Poitiers, where he died in 1652, at the age of eighty years.

* *Abstinencia puellæ Consolantaneæ, ab Israelis Harveti confutatione vindicata*, 8vo. 1602. A translation of this work appeared the following year in London.

† *De tempestive phlebomotie et purgationis usu, adversus Homophobas*, in collectione opusculorum, 4to. Paris, 1639.

CHAPTER IX.

Progress of Anatomy during the 16th century—Bonacciolus : his *Enneas Muliebris*—Achillini—Berengarius—Servetus—Circulation of the Blood—Gunterius : his Anatomical Discoveries : Vicissitudes in his Life—Dryander—Vesalius—Columbus—Valverda—Ingrassia—Fallopianus—Eustachius—Arantius—Coiter—Varolius—Cæsalpinus : his near approach to the Discovery of the Circulation—Claim of Paolo Sarpi and others to the merit of that discovery, unfounded—Piccolomini discovers the three Valves at the Entrance of the Cæcum : maintains the Origin of the Nerves to be from the Medulla Oblonga : distinguishes the Cortical from the Cineritious Portion of the Brain : describes the Adipose Membrane—Hieronymus Fabricius ab Aquapendente first demonstrates the Structure of the Valves of the Veins : instructs Harvey in Anatomy : created a Knight of the Order of St. Mark by the Republic of Venice : offends his German Pupils—Salomon Albertus.

THE Progress of Anatomy during this century partook, with almost every other branch of useful knowledge, most abundantly of the general stimulus which now began to result from the two great events of this period,—the discovery of the art of printing, and that great reformation in religion, which the united labours of the first reformers effected during the preceding century. Greater progress was made in the march of anatomical and physiological discovery between the years 1500 and 1600 than in all the lengthened period which preceded it.

The first anatomical work deserving notice in this century is a large folio volume,* published in 1503, and dedicated to Lucretia, daughter of Pope Alexander VI; although this dedication is only to be met with in the folio Princeps edition, having been omitted in the subsequent impressions, either because the importance of the lady sank upon the death of her father, or because with the termination of the reign of that profligate and licentious pontiff in that very year, a reign of purer morals commenced, when men, or possibly the lady herself, began to see the gross indelicacy of dedicating a work expressly on the formation of the foetus, and in which "*alia plurima quoque ad coitum, et ad rem veneream facientia, dictione liberrima describuntur,*" to a female with the slightest pretensions to modesty. In this work he gives a clear description of the clitoris and the nymphæ, and is the first writer who points out the distinction between them. This work formerly was highly prized on account of the accuracy of its anatomy of the foetus and the organs of generation in both sexes. It is now however, of little value.

In 1516, Achillini first published, at Venice, his great work on the Anatomy† of the Human Body, a work of considerable merit for the age; and in 1522, his Annotations on the Anatomy of Mundinus‡ made their appearance along with the "*Fasciculus Medicinæ Johannis de Ketham.*" He is

* *Enneas muliebris, sive de foetus formatione, &c.* Fol. 1503. An 8vo. edition was published in 1537.

† *De humani corporis anatomia*, 4to. Venet. 1516

‡ *In Mundini anatomien annotationes*, fol. Venetiis, 1522.

believed by some to have been the discoverer of the *Malleus* and the *Incus*, among the bones of the internal ear. Achillini, who was born at Bologna, in 1472, was justly celebrated both as a physician and a philosopher. Such was the rapidity of the progress which he made in his studies, that he was, at a very early age, appointed a professor; and was promoted, in 1506, to the chair of philosophy at Padua, where his lectures were attended by multitudes of pupils. Being, however, compelled by the war between Venice and the league of Cambray to quit Padua, he returned to Bologna, where he was re-appointed to the chair of philosophy. He adopted and maintained the doctrines of Averrhoes, and was remarkable for his acuteness in controversy. He was the rival of Pomponacius, whose wit often gained him the victory; for, notwithstanding the superiority of his talents, such was the simplicity and *mauvaise honte* of Achillini, that, although admired and respected for his abilities and erudition, he was the butt of his own pupils. He died at Bologna, and was interred in the Carmelite church of St. Martin the Great, at the early age of forty years; and a complimentary epitaph was afterwards penned to his memory by James Vitalis.

The name of Berengarius has already been introduced in the last chapter, on account of his being the reputed originator of the practice of salivation, by means of mercurial friction, in cases of Syphilis; but it is from his important researches into the anatomy of the human body, that he justly derives that celebrity which has immortalized him under the name of Carpus or Carpensius,

a name derived from Carpi the place of his nativity. Such, indeed, was his passion for anatomical pursuits, that he incurred, as has been already noticed, the imputation formerly brought against Herophilus and Erasistratus, and afterwards, in a more enlightened age, against the illustrious Vesalius, of having dissected living human subjects for the purpose of observing the peristaltic motion of the bowels. In 1521, he published his Commentaries upon the Anatomy of Mundinus,* a work valuable not only on account of the numerous corrections of the text which it contains, but also on account of the vast collection of anatomical facts it exhibits, and which furnish equal proof of his diligence and skill, insomuch that Haller, speaking of it, says, “*omnia enarrare quæ recte videt, infinitum foret*—” to point out individually everything which the author has correctly observed, would be an almost endless undertaking. This work contains some rude engravings of the abdominal muscles, and other parts. In the following year he published his Anatomy, at Bologna,† accompanied with plates. This and the former work contain the whole of his anatomical discoveries. He was the

* *Commentaria, cum amplissimis additionibus, supra Anatomiam Mundini, cum textu ejus in pristinum nitorem redacto.* 4to. Bononiæ, 1521.

† *Isagogæ breves, pellucidæ et uberrimæ, in Anatomiam humani corporis, ad suorum scholasticorum preces in lucem editæ.* 4to. Bononiæ, 1522. 8vo. Colonia, 1529. 8vo. Argentorati, 1533, and 4to. Venetiis, 1535.—A translation was published in London in 1664, by H. Jackson, under the title of “*A Description of the Body of Man, being a practical Anatomy.*” Besides these works he had published a treatise “*De cranii fractura,*” 4to. Venetiis, 1518.

first to observe and explain the appendix of the intestinum cæcum, which he describes at length under the name of *Additamentum Coli*. He considered the three divisions of the *recti* muscles of the abdomen, as the tendons of three muscles which serve for the contraction of the abdomen. He was the first to describe the anastomosis of the *venæ portæ* and *vena cava* within the liver. He also first observed the caruncles in the kidneys, which resemble the nipples of the breast; and denominated the linea alba, *linea centralis*, from its position along the centre of the abdomen. Speaking of the ear, he observes that two little bones adjacent to the tympanum, being moved by the undulation of the air, strike against each other, and by their motion produce the sensation which we call sound. This, he observes, is the real structure of the parts, which, notwithstanding its being so remarkable, had been noticed by few. In this account he does not, however, claim, as some have done for him, the merit of being himself the discoverer.

A few years later than the anatomy of Berengarius, Servetus, a Spanish physician, eminent for his talents, and not less so for his erudition, published those two works* which, however they may be regarded as detracting from the orthodoxy of his religious opinions, establish his claim to the rank of a philosophical inquirer, a good anato-

* De Trinitatis erroribus, Basileæ, 1531, and Christianismi Restitutio. Basil, 1533. This work, from having been obnoxious to the clergy, and its copies, no doubt, destroyed wherever their influence extended, has become so scarce, that not above two or three copies are known to exist.

mist, and an attentive observer. In his work entitled "*De Christianismi restitutione*," we find the first genuine ray of light which has been thrown on the circulation of the blood, by any of the writers* who preceded our illustrious countryman, Harvey. The work which contains the passage proving Servetus to have been, at least, partially acquainted with the manner in which the circulation of the system is maintained, is of such extreme rarity as to be of enormous value, and attainable but by few: the passage itself is as follows:—After observing that the vital spirit is composed of the most subtle parts of the blood, and of the air which insinuates itself into the lungs, and that the source of this blood is in the right ventricle of the heart, he goes on to say: "But the communication, that is to say, the passage of the blood from the right to the left ventricle, does not take place across the middle septum, as persons have generally imagined; it depends upon a more singular structure. In the long winding of the lungs, this subtle blood is agitated, and prepared by the action of the viscus, and gains a yellow colour. From the *vena arteriosa* † it passes into the *arteriæ venosæ*, ‡ where it becomes mingled with the air that has entered the lungs, and loses its fuliginous excrements. Lastly, it enters the left ventricle, which attracts it in its

* The pretended claim to this discovery advanced on behalf of Nemesius has been already canvassed in a former part of this work.

† Pulmonary artery.

‡ Pulmonary veins.

diastole. Such is the preparation of the blood from which the vital spirit is formed ; this preparation, and this passage from the *arterial vein*, into the *venous artery*, are evidently proved by the size of the vessels, which would not be so large, nor possess so many branches, nor carry so great a volume of blood to the lungs, if it were merely designed for the nutriment of that viscus." He then adds that this vital spirit is sent from the left ventricle into all the arteries of the body. From all this it is sufficiently clear that he had a perfect acquaintance with the minor circulation through the lungs, and even some idea of the chemical change which the blood undergoes from coming in contact with the atmospheric air in that organ—and thus laid the foundation of that noble superstructure, which had baffled the genius and enterprise of all his predecessors ; and which none, even of his successors, aided as they were by the clear manner in which he had pointed out part, and intimated the remainder of the way, were able to accomplish, until the patient investigation, and brilliant talents of our countryman Harvey, after a lapse of nearly another century, discovered the important secret, and completed that beautiful theory of the circulation, of which Servetus' discovery can only be regarded as the faint *penumbra*.

In the year 1536, Johannes Guinterius, whose real name was Winther, a native of Andernach, a town of the district of Ubich, in the circle of the lower Rhine, published a valuable work on Ana-

tomy,* in which we find the term *Pancreas* first applied to that large conglomerated gland which lies across the spine, and behind the stomach, between the two lamina of the mesocolon; resembling the salivary glands in appearance, as well as in the manner of the formation of the duct by means of which its contents, also similar to those of the salivary glands of the mouth, are poured out into the duodenum along with those of the liver, to assist in the process of digestion, which, commencing in the stomach, is carried on more or less through the whole length of the intestinal canal. Guinterius also boasts of the discovery of the complication of the spermatic vein and artery, a little before their insertion into the testes—a circumstance which, he says, he pointed out to Vesalius when he was studying anatomy at Paris, about the year 1526. The uterus, he said, had two sinuses, corresponding with the number of the breasts, not divided by a septum, but terminating in one narrow cavity, which he terms the neck of the uterus. He maintains that the muscle which surrounds the neck of the bladder is formed of transverse fibres, and discharges several functions, first serving to close the bladder and then, after the discharge of the urine, propelling what remains in the urethra by the variety of its contractions in every direction.

Few histories illustrate more forcibly the omnipotence of talents in elevating their possessor to

* *Anatomicarum institutionum ex Galeni sententia, per J. Guinterium Andernachum, Medicum. Libri quinque. Basileæ, 1536. 8vo. 1539, 4to.*

rank, to fame, and fortune, than that of Winther, who, although sprung from a family in the humblest paths of life, succeeded, after struggling with the greatest difficulties for a long succession of years, in raising himself to the first distinction, and obtaining a place among the nobles of the land, as a spontaneous tribute to his merit from the Emperor Ferdinand I.

Winther was born in 1487, and sent at the age of twelve to Utrecht, to study the classics. Finding his means of continuing his studies here to fall short, he removed to Deventer, where his wants were at first so urgent, as to compel him to stoop to the degradation of begging, and to solicit as a favour the most menial employments.

Labour, industry, economy, and sobriety, enabling him at length to overcome these difficulties, he removed to Marpurgh, for the sake of cultivating natural philosophy; and, while there, displayed such brilliant talents and such extensive erudition, that the inhabitants of Gosling gladly availed themselves of the opportunity of his residence in their neighbourhood to engage his services as an instructor for their children. His fame rapidly spreading, he was appointed Professor of Greek to the University of Louvain; but the bent of his genius leading him to prefer the science of Medicine to the study of the ancients, he remained but a short time at Louvain, and, resigning his newly acquired Professorship, removed to Paris, at that period the Edinburgh of medical pursuits.

Here he commenced the study of Medicine in 1525, taking his Bachelor's degree in 1528, and his Doctor's in 1530, upon which occasion, in consideration of the inadequacy of his means, and in consideration also, there can be little doubt, of his pre-eminent merit, half the regular charges for graduation were remitted to him. Having thus, at length, reached the point which his ambition so long, and, for a time, so hopelessly prompted him to, he was gratified by the appointment of physician to Francis I, and continued for many years to practice in Paris, where he was also in the habit of giving private lectures on anatomy. An advantageous offer from Christian III of Denmark, induced him at length to exchange the gaities of Paris for the more sober habits of Copenhagen, where he continued to reside till the religious disturbances in 1537 compelled him to remove first to Metz, and thence to Strasburg. Here he was received with the honour due to his merits, appointed to a professorship in the University, and established in a lucrative and extensive practice, which he continued to enjoy with reputation and success for a great number of years, extending his visits occasionally to almost every part of Germany, and even into the fertile plains of Italy. At length, as has been already observed, letters of nobility, the honourable testimonials of his illustrious merit and distinguished services, were gratuitously conferred upon him by the Emperor Ferdinand I in the year 1562, and he had the gratification of exhibiting to the world the rare but encouraging example of the beggar of Deventer rising, by unaided merit, to

the rank of a nobleman of Strasburg. Some years after his elevation to this well-earned rank, and within two years of the termination of his exemplary life, he published two volumes of a work on the new and old systems of medical practice,* and, at length, closed his chequered life in the 87th year of his age, on the 4th of October, 1574, having been attacked with an ardent fever at the house of a noble patient whom he was attending, whence he was removed to his own house, and there he expired.

The life of Guinterius holds out a most instructive lesson to the young, teaching them not to despond under the most discouraging circumstances, nor to abandon hope under the severest calamities. There is no difficulty so great, no depression so low, as to be beyond the counteracting influence of talents, aided by industry, by patience, by prudence, and by perseverance; and although the ancient proverb, "*Non cuivis licet adire Corinthum*" may still be found to hold good, and it may not fall to the lot of all to attain the dignity of the peerage, it is, nevertheless, within the compass of most who possess ordinary capacity to raise themselves above want, and attain to respectability, if not to distinction.

Contemporary with, but somewhat junior to Guinterius, was John Dryander, a native of Wetteran, in Hesse, who deservedly ranks high among the restorers and improvers of anatomy. His real name was Eichmens, which he exchanged, according to the custom of the age, for one of more

* De Medicina veteri et nova. 2 vols. Fol. Basileæ, 1571.

dignity. Having been educated in France, and taken his degrees in Medicine at Mayence, he settled at Marpurgh, where he taught anatomy for a period of twenty-four years, or from 1563 to the time of his death in 1560. He was the first to point out several distinctions, unnoticed before his time, between the cortical and medullary portions of the brain. He also saw the olfactory nerves, which he miscalled the optic. These observations he published in his *Anatomy** in the year succeeding that in which he began to lecture at Marpurgh; and at a subsequent period he published a new edition of the *Anatomy*† of Mundinus, carefully collated with the oldest MSS.—in which he frequently corrects his author.

At this period also flourished the illustrious Vesalius, appearing like a star of the first magnitude amid a galaxy of minor luminaries. He was a native of Brussels, and raised himself early by the strength of his genius, and the force of his industry, to the first rank among the improvers of anatomy. He obtained the admiration not only of his contemporaries, but also of his successors. His first work, on the structure of the human frame,‡ made its appearance at Basil, in the year 1543, and went through four editions in the course of about 60 years; which, when we consider the bulk of the volume, speaks largely in favour of its merit

* *Anatomiae pars prior, in qua membra ad caput spectantia recensentur et delineantur.* 4to. Marpurg, 1537.

† *Anatomia Mundini ad vetustissimorum manuscriptorum codicum fidem collata.* Marpurg, 1541.

‡ *De humani corporis fabrica.* Fol. Basileæ, 1543.

and its popularity. To enumerate the whole of the important discoveries made by this indefatigable and sharp-sighted anatomist, would almost be to give a transcript of his voluminous and important anatomical works; a few, however, of the more prominent demand attention. He was the first to notice the fact of the optic nerve being inserted a little on one side, and not directly in the axis of the eye, and observed that the *ligamentum teres* of the thigh was not inserted into the middle of the head of the bone, but rather into its side. He also gave us the first correct representation of the bones which constitute the organs of hearing.

Besides his anatomical works, which continue in high esteem even to the present day, Vesalius wrote a book on the use of the Decoction of the China Root,* an alterative much in use at that period in syphilitic and other cases.

Contemporary and intimate with Vesalius, was Realdus Columbus, (a native of Cremona,) and distinguished, like him, for the extreme accuracy of his anatomical researches. Following up the ideas of Servetus respecting the circulation of the blood, he gave a farther finish to the imperfect sketch left by that able physician and expert anatomist; not only describing the entrance of the blood from the vena cava, and its subsequent transmission, through the pulmonary circulation, to the left ventricle and the aorta, but demonstrating that the whole of the blood passes through the lungs, and

* De modo propinandi Radicis Chinæ Decoctum. Fol. Basileæ, 1546.

not the vital spirit only; thus making one step further in advance toward the great discovery, beyond his predecessor Servetus, but still falling into the same error with former anatomists respecting the functions of the liver, which he imagined to be the source of the blood that goes to supply nutriment to the stomach, &c. He explains the use of the lungs to be for the preparation and generation of the blood and vital spirit in them: for he imagined that the blood, being attenuated by elaboration in the right sinus or ventricle of the heart, is carried thence to the lungs, where, by their continual action, it is agitated, farther attenuated, and mixed with the air entering through the bronchiæ from the trachea—and that the blood and air, when thus incorporated together, are received into the ramifications of the pulmonary vein, and carried by it to the left ventricle of the heart. This theory of the functions of the lungs, and the nature of the change which the venous blood undergoes in its passage through that viscus to be brought back to the condition of arterial blood, if restricted to the absorption of the oxygenous, or vital portion of the air taken in at each inspiration, is almost in perfect accordance with the discoveries of modern chemistry. Besides his researches into the nature of the circulation, Columbus made discoveries in other parts of anatomy which deserve to be noticed. He was the first who clearly and accurately described the caruncles in the vagina of females, or spoke of the duplicature of the peritonæum, and asserted that the pleura, also, was double in every part. He like-

wise claims the merit of having discovered the *tunica innominata* of the eye, which Douglas, however, imagines to be the same described by Galen under the name of the *tunica sexta*. The discovery of the third bone in the organ of hearing appears likewise to belong to him.

Johannes Valverde, a Spaniard, who had studied under Columbus, is said to have introduced the study of anatomy into his native country, where he published the anatomical plates of Vesalius, with a Spanish translation of the descriptions, and an addition of four new figures, representing the direction and progress of the fibres composing the muscles of the anterior part of the body, a woman in a state of pregnancy, and the cutaneous veins of the anterior and posterior parts of the body. With the exception of these four additional figures, he does not appear to have contributed any thing original to the science, or to have done more than to extend the knowledge of it to another country in which, till then, it does not seem to have been much, if at all studied.

Among the other successful cultivators of anatomy at this period, we must not omit to mention John Philip Ingrassias, a native of Sicily, who, after studying Medicine at the university of Padua, took his degree of doctor there in 1537 with such singular distinction that he received, almost immediately after, invitations to accept of professorships at various schools in Italy: and accepting the chair of Medicine and Anatomy at Naples, which he retained with infinite credit for many years, attracted vast numbers of pupils

from all quarters to hear his lectures. He was peculiarly qualified for the situation he filled, by uniting a most intimate acquaintance with the works of the ancients, to a thorough knowledge of all the prevailing doctrines of the day, great practical skill in the science of Anatomy, and a sound judgment, which enabled him to form a just estimate of the relative and comparative merits of the ancients and the moderns. He cultivated Anatomy with great assiduity, and is deservedly ranked among its most distinguished improvers; in that part especially which relates to the bones of the head and the organ of hearing, in the latter of which he first pointed out the *stapes*, a discovery which, although claimed by others, has been deservedly awarded to him by Fallopius, whose decision must be regarded as unquestionable. He also described minutely the cavity of the *tympanum*, the *fenestra rotunda* and *ovalis*, the *cochlea*, semicircular canals, &c. &c. and Eloy was led, from an inspection of his plates, to think he must have been acquainted with the muscle of the *malleus* which Eustachius has generally obtained the credit of having discovered. The discovery of the seminal vessels is also ascribed to him. His pupils paid an honourable tribute to his great talents and unwearied exertions for their improvement, by having his portrait taken and placed in the Neapolitan schools with this inscription underneath: *Philippo Ingrassiæ, Siculo, qui veræ medicinæ artem et anatomen, publice enarrando, Neapoli restituit,*

Discipuli, memoriæ causa, P.P. “To Philip Ingrassias of Sicily, who, by his lectures, restored the science of true Medicine and Anatomy in Naples, his pupils have suspended this portrait as a mark of grateful remembrance.”

He at length returned to his native island, where he was honourably received, had the rights of citizenship conferred upon him, and was appointed in 1563, Proto-Medicus of Sicily and its adjacent islands, by Philip II of Spain. This office appears to have been one of the very first importance, since the person holding it seems to have concentrated in himself all the powers which belong in this country to the College of Physicians collectively; and hence its possession enabled Ingrassias materially to contribute to the improvement of medical science, which he effectually did by a severe and rigid examination into the qualifications of the several candidates; a duty which he discharged with the most conscientious and honourable impartiality. Such was the excellence of his regulations, during the prevalence of the destructive plague which depopulated Palermo in 1575, that he obtained from the universal voice of his fellow citizens the honourable appellation of the Sicilian Hippocrates. But such was his generous disinterestedness, that when the magistrates, in gratitude for his great and invaluable services, voted him a reward of two hundred and fifty gold crowns per month, he declined receiving more than was necessary for the endowment and decoration of the chapel of St. Barbe which he had built in the cloister of the Dominican Convent at

Palermo. He published ten works during his life, of which a list is annexed in the note,* and most of which went through several editions; but his principal work,† consisting of a commentary on Galen's book on the Bones, and containing the text of Galen in Greek and Latin, accompanied by a copious and erudite commentary which enters minutely into the description of the parts, those especially connected with the organ of hearing—and a vindication of Galen, as far as was possible, except against the truth of modern dis-

* The following is a list of the several works published by Ingrassias during his life time:—*Iatropologia*; *Liber quo multa adversus Barbaros Medicos disputantur*, 8vo. Venet. 1544—1558. *Scholia in Iatropologiam*. Neap. 8vo. 1549. *De tumoribus præter naturam*, Fol. Neap. 1553. This, in fact, is a commentary on some of the works of Avicenna.—*Raggionamento fatto sopra l'infermità epidemica dell'anno 1558*. 4to. Palermo 1560: to which was subjoined: *Trattato di due mostri nati in Palermo in diversi tempi*.—*Constitutiones et Capitula, nec non Jurisdictiones Regii Proto-Medicatûs officii, cum Pandectis ejusdem reformatis*, 4to. Panormo, 1564—1567. In this he gives an interesting account of the nature and duties of the office to which he had himself been appointed the preceding year. *Quæstio de purgatione per medicamenta, atque obiter etiam de sanguinis missione, an sexta die possit fieri*, 4to. Venet. 1548. *Galenî ars medica*, fol. Ven. 1573. *De frigido potu post medicamentum purgans Epistola*, 4to. Ven. 1575. *Informazione del pestifero e contagioso morbo, il quale affligge e habbe afflitto la città di Palermo e molti altre città e terre del regno di Sicilia, nell' anno 1575 e 1576*, 4to. Palermo 1576—giving an account of the dreadful visitation in which he distinguished himself so much for zeal and ability. A Latin translation of this was published in 1583, at Nûrimbergh, by Joachim Camerarius, under the name of *Methodus curandi pestiferum contagium*.

† The title of this posthumous publication was "*In Galenî librum de ossibus doctissima et expertissima Commentaria*." Messina, 1603.

covery—did not appear till after his death in the year 1580, at the age of eighty - years. This posthumous work was at length printed at Messina under the superintendence of his nephew Nicholas Ingrassias.

Few men have more eminently distinguished themselves in the path of science than Ingrassias, and if his fame as an Anatomist has not rivalled that of more successful competitors, the cause must be sought, not in any deficiency of zeal, of industry or of ability in him, but in the multitude of candidates for fame who at this period crowded the field of anatomical research.

In the year 1548 Pisa had the honour of receiving, as professor of Anatomy, Gabriel Fallopius, one of the most expert anatomists, and distinguished physicians of this century. Fallopius, or Fallopio as he was correctly called, was born, it is believed, at or near Modena, in the year 1523 ; and, after first studying anatomy under the celebrated Brassavola, travelled into other countries for farther improvement. He is said to have acquired an astonishing share of knowledge at a very early age. If the period assigned for his birth be correct, he was only twenty-five when he obtained the professorship at Pisa, and at that age he had, as we are informed, made himself master not only of Medicine and Anatomy, but also of Botany, Astrology, and Chemistry. Such was the reputation, however, which he had acquired for his anatomical skill, that his lectures both at Pisa and at Padua, to which latter place he removed about the year 1551, attracted crowds of auditors.

He was, as Douglas has most happily described him, "*in docendo maxime methodicus, in medendo felicissimus, in secundo expeditissimus,*" most methodical in teaching, most successful in healing, and most expeditious in dissecting. His industry contributed greatly to the elucidation of anatomy, although he has claimed and obtained credit for discoveries made long before his time. The uterine tubes which are supposed to receive the ovum from the ovarium in order to convey it into the uterus, and which Anatomists have usually distinguished by his name as though he were their discoverer, were both known to, and described by Herophilus, and Rufus of Ephesus. Equally unfounded is his claim to the discovery of the *musculi pyramidales*, which were observed before his time by Galen, and by Jacobus Sylvius. So justly high, however, does his character stand in other respects, that these trifling circumstances tend but little to detract from it. His "Anatomical Observations,"* is one of the best productions of that century. He was the author, besides, of a long catalogue of other works, all of which possess the highest merit. He died at the early age of forty, in the year 1563.

Bartholomew Eustachius, whose anatomical plates are familiar to most medical students, contributed also by his labours to the improvement of anatomy: and his Anatomical Works,† pub-

* Observationes anatomicæ in libros quinque digestæ. Venetiis, 1561.

† Opuscula Anatomica, nempe de renum structura, officio,

lished at Venice in 1563, record a variety of important discoveries which he made. Of his history we only know that he was born at San Severino, a small village of Italy, probably about the year 1520, and studied Anatomy at Rome with such success that he was appointed to the chair of Anatomy in that College; and died there in 1574. The greater part of his works have been lost, which, judging from those that remain, cannot be sufficiently regretted. To him we are indebted for the discovery of the renal glands. He blames Vesalius much for not having acknowledged that, when examining the kidney, he had employed that of a dog, in place of the human, and for not having taken notice of the difference. He maintained that the duct of the renal veins is oblique and not transverse as represented by Vesalius: and gave a beautiful delineation of the *Canaliculi urinarii*, which he compares to minute hairs, but which had been described by Massa before him. He is among the number of claimants for the discovery of the *stapes*, an honour which Fallopius, however, allots to Ingrassias. We owe to him the first accurate description of the *Thoracic duct*, which, he says, resembles a white vein, in horses, and opens with a semicircular orifice into the internal jugular vein. The discovery of the canal leading from the throat to the ear, which answers so important a purpose in the

et administratione: de auditûs organo: ossium examen: de motu capitis: de vena quæ azygos dicitur, et de alia quæ in flexu brachii communem profundam producit: de dentibus. Venetiis 1563.

office of hearing, is owing to him, and has very properly been distinguished by his name. In his treatise on the kidneys he speaks of the glands of the larynx. The valve at the orifice of the coronary vein of the heart was first discovered by him; and he claims the discovery also of the valve in the *vena cava*, near the right auricle of the heart, which, however, appears to have been observed by Sylvius before him.

Such are the leading features of the investigations and discoveries of this distinguished anatomist, whose useful labours contributed in no trifling degree to awaken the dormant spirit of inquiry, and promote the march of improvement.

In 1564, Julius Cæsar Arantius, a native of Bologna, where he was born about 1530, and educated by his uncle Bartholomew Maggius, and Vesalius, published his first work "*De humano foetu opusculum*," at Rome, in which he corrected many errors into which preceding anatomists had fallen respecting the uterus; the vessels of which he very properly describes as derived from the spermatics and hypogastrics. In the first chapter of the quarto edition of this work, published at Venice in 1587, he describes the substance of the uterus as resembling a sponge, not simple but divisible into laminæ, and perforated with minute holes or pores. His description of the vessels of the uterus is given in the third chapter.

In the fourth chapter he describes the *foramen ovale*, and *ductus arteriosus* in the foetus; and denies the existence of the *urachus* or *allantoid* in the human subject.

In 1579, Arantius published a commentary upon Hippocrates' book on wounds in the head: and in his work "*De tumoribus præter naturam*," 4to., published in 1581, he describes a pair of forceps which he had invented for extracting polypi from the nostrils. He made one step farther towards the discovery of the circulation than most of his predecessors, having in this work demonstrated that there was no communication after birth from the right to the left ventricle of the heart, but that the blood was carried through the lungs by the pulmonary artery. This fact had, however, been already demonstrated by Servetus and Columbus.

Arantius filled the chair of Medicine, Anatomy, and Surgery, in the University of Bologna, where he had taken his degree of Doctor of Medicine, till the time of his death in 1589, and bore the character of an expert and indefatigable anatomist.

Volcher, or Volcherius Coiter, a native of Groningen, and pupil both of Fallopius and Eustachius, proved himself worthy of the illustrious masters under whom he studied, being so passionately attached to anatomical pursuits, that after he had completed his studies at Padua, at Rome, at Bologna, and at Montpellier, he accepted the post of physician to the French army, in order to increase his opportunities of obtaining subjects for dissection. His numerous observations on the effects or alterations produced by different diseases in the structure of the viscera, prove his singular fitness for the situation he held. Notwithstanding the shortness of his life, such were

the energy and activity of his mind, that he made as much of the scanty period allotted to him as others do of the most protracted length of days, and he contributed largely to the improvement both of anatomy and surgery; among the former of which were his observations on the brain, whose motion he found to originate in that of the arteries. He also ascertained that this organ was not always essential to life, which, in some animals survived its removal. Coiter, or Koyter, as we sometimes find the name written, was the first who gave a description of the *corpora lutea* in the *ovaria*, together with the order in which the parts of a chick are developed in the egg. With respect to the heart, he observed the contraction of the auricle to follow, not precede that of the ventricle. His descriptions of the frontal sinuses, as well as of the organs of hearing, are infinitely more copious and minute than those of any other author. He discovered, or at least appears to have been the first to describe, as distinct muscles, the two corrugators of the eyelids, together with two similar muscles belonging to the lips. He explains the origin of the bones in the most distinct and satisfactory manner, accounts for their growth, and shews in what the difference consists between those of an infant and those of an adult; and, for the purpose of explaining this difference more intelligibly to his pupils, he made preparations of skeletons of various ages for demonstration.

In 1566, he published his engravings of the

Cartilages.* Settling at Nurimburg, after he had left the army, he published in that town his principal anatomical work,† to which he prefixed a short account of the history and progress of anatomical knowledge, pointing out the order in which it should be studied. In this work he first gave a complete set of plates of the skeleton of a foetus, explanatory of his observations on the growth of the bones. In his remarks upon the organs of hearing, he points out an error in Fallopius' account of what he calls the *tympanum*, his description of which was taken chiefly from the ears of such animals as chew the cud, in whom this passage is formed like a certain kind of sea-shell, or a Turkish drum, while its form in man is totally different. Hence he is of opinion that this cavity receives its name rather from its use than its form. He contends that there are two of these cavities; for, he says, immediately behind the myringa, as he terms the tympanum, in the upper and anterior parts, there appears a cavity, at first narrow, but gradually dilating, and stretching backwards towards the upper parts: this part he observed to be spongy and fungous, and to communicate with the internal space of the mammillary process. The two largest of the bones of the ear contain, he says, a multitude of small

* De cartilaginibus, Tabulæ quinque, Fol. Bononiæ, 1566.

† Externarum et internarum principalium corporis humani partium tabulæ atque anatomicæ exercitationes, observationesque variæ, novis et artificiosissimis figuris illustratæ, Fol. Norimbergi, 1573.

holes filled with a medullary substance ; but this is not the case with the third, which is too small.

In 1575, he published a folio volume of comparative Anatomy,* in which he has given good figures of the skeletons of various quadrupeds, birds, and amphibious animals ; and in the following year, 1576, he closed his short but useful life, at the premature age of forty-two.

Coiter has noticed, among his surgical observations, that the danger is much greater, in injuries of the brain, where the dura mater continues unruptured, than where it has been ruptured ; in such cases, therefore, he opened it boldly to let out the extravasated matter. Fungous excrescences of the brain, he says, may be safely pared down. In one case he cured a patient who had received a wound in the brain, reaching down to the ventricles : but the patient ever after was subject to mental aberration.

About this period Constantius Varolius, a native, like Arantius, of Bologna, and distinguished for his anatomical skill, discovered that transverse process of the brain which has been denominated, in honour of him, the *Pons Varolii*, Varolius's bridge : he also first discovered the glands of the *choroid plexus*. Varolius was also the first to divide the brain into three portions, by adding the *medulla oblonga*, or upper portion of the spinal marrow, previously to its issuing from the skull,

* *Diversorum animalium sceletorium explicationes, cum lectionibus Fallopii de partibus similaribus. Fol. Norimb. 1575.*

and giving birth to nerves whose origin had been supposed to be in the brain. The discovery of the valve of the colon, of which he has left an elegant and accurate description, has also been ascribed to him.

As we approach nearer to the period at which Harvey completed his grand discovery of the circulation of the blood, on the very brink of which men had so long hovered without effecting it, we find facts multiplying and discoveries being made, which, like a number of paths converging to one point, appear almost to force the mind to take the right direction, and seem to have left little more for such a mind as Harvey possessed, than to draw the conclusions which naturally flowed from the observations already made, and verify those conclusions by a series of experiments such as the state of science enabled him to make: which we shall presently find to have been the very course he pursued. Almost every anatomist who took up the inquiry, enriched the observations of his predecessors by discoveries of his own, and thus accumulated a mass of important facts, only requiring due examination to lead to an inevitable detection of the truth. Thus we find Columbus improving upon the demonstrations of Servetus, and Arantius upon those of Columbus; while Cæsalpinus, no less distinguished for his skill in anatomy, than for his services in botany, in his *Peripatetic Questions*,* which he wrote in

* *Quæstionum Peripateticarum, libri quinque, 4to. Venetiis, 1571.*

opposition to the doctrines of Galen, makes still closer approaches to the truth. In the fourth book of that work we find the following very remarkable passage:—"Vasorum in cor desinentium, quædam intromittunt contentam in ipsis substantiam, ut vena cava in dextro ventriculo, et arteria venalis in sinistro; quædam educunt, ut arteria aorta in sinistro ventriculo, et vena arterialis in dextro; omnibus autem membranulæ sunt oppositæ et officio, delegatæ, ut oscula intromittentium non educant, et educentium non intromittant. Contingit, corde contrahente, arterias dilatari, et dilatente constringi; dum enim dilatatur cor, claudi vult orificia educentium, ut ex corde non influat tunc substantia in arterias; contrahente autem se, influere dehiscentibus membranis."—He supposes the pulsation of the arteries to arise from an effervescence of the blood in the heart. But he is still more explicit in the fourth chapter of the fifth book of the same work, (folio 125,) where he describes the minor circulation through the lungs, which Servetus first distinctly demonstrated, in the following terms: "Idcirco pulmo per venam arteriis similem, ex dextro cordis ventriculo fervidum hauriens sanguinem, eumque per anastomosim arteriæ venalis reddens quæ in sinistrum cordis ventriculum tendit, transmissio interim aëre frigido per asperæ arteriæ canales, qui juxta arteriam venalem protenduntur, non tamen osculis communicantes, ut putavit Galenus, solo tactu temperat. Huic sanguinis circulationi ex dextro cordis ventriculo per pulmones in sinistrum ejusdem ventriculum, optime respondent ea quæ ex

dissectione apparent. Nam duo vasa in dextrum ventriculum desinentia, duo etiam in sinistrum: duorum autem unum intromittit tantum, alterum educit, membranis eo constitutis." He thus clearly described the manner in which the blood circulates from one ventricle of the heart to the other, and shewed that he fully understood the nature and use of the valves. He approached so close to the verge of the grand discovery of the return of the blood from the arteries through the veins, that he even noticed the fact of the veins swelling below a ligature. Here, however, he stopped short, and was so far from comprehending the general principles of the circulation, (notwithstanding Douglas's thinking him entitled to equal praise with Harvey, who only completed what he had commenced,) that he believed the blood to move backwards and forwards in the same vessels, returning to the heart during sleep. Like all who had hitherto preceded him in the investigation, Cæsalpinus found in the liver a labyrinth of vessels, in which he became inextricably bewildered: and was so far from having a just conception of the true nature and importance of the facts which had fallen under his observation, or the results which were likely to flow from them, that he only served to furnish an additional proof of the imperfection of the human faculties, and the close approach which it is possible to make to the regions of discovery without attaining to the actual completion of our purpose.

As for the claims of Paolo Sarpi, the learned historian of the Council of Trent; of Fabri a

Jesuit; of Helvicus Dietericus, and others, to the merit of having anticipated Harvey in the honour of his great discovery, they rest upon too shadowy and unstable a foundation to merit a moment's consideration.

Archangelo Piccoluomini, or Archangelus Piccolhominus, published a work on Anatomy* in the year 1573, which, (notwithstanding the objections of Riolan, who complains that it is more philosophical than anatomical, and wanders into the regions of physiological reverie, and theoretical romance, instead of confining itself to the useful path of practical observation,) contains several things worthy of attention. Among other interesting and important discoveries, we meet with that of the three valves at the commencement of the *cæcum*, designed to prevent the retrogressive motion of the *fœces*. Piccoluomini was the first to distinguish the cineritious from the medullary substance of the brain; and maintained that all the nerves originated in the *medulla oblonga*. To him we are indebted for the first delineation of the anastomosis of the *vena portæ* and *vena cava* within the liver, the first description of which, as we have already seen, was given by Berengarius.† Following the opinion of Galen he ascribes the possession of prostate glands to women. He gave the first description of that particular membrane of the fat which was afterwards named by Riolan

* Anatomix, sive de resoluti: one corporis humani libri quatuor. 8vo. Patavæ. 1573. A second edition was published, also in 8vo. at Frankfort in 1591.

† See page 62.

the *membrana adiposa*; and maintained that the peritonæum was every where double. He considered the *œsophagus*, *stomach* and *intestines* as forming but one continued canal from the mouth to the anus; and affirmed that the inner coat of the latter, from its corrugations, was three times longer than the external, and that the design of these corrugations was to detain the chyle, and facilitate its extraction from the fœces by the mesenteric veins. His description of the urinary tubes is much more complete than that of Berengarius or Massa, and the reason he assigns for the left spermatic vein, not arising from the emulgent, is precisely the same with that adopted by the moderns. Piccoluomini was a native of Ferrara, and a citizen of Rome. Besides the work of which we have spoken, he left a volume of *Anatomical Lectures*,* and *Commentaries* on part of Galen.†

We have already seen the gradual and close approaches which anatomical research was making towards the consummation of the grand discovery, that of the course taken by the blood from its first departure from the left ventricle of the heart through the medium of the arterial system, to its final return to the same spot, after traversing the remotest extremities of the body, through the medium of the veins, the right ventricle, and the pulmonary, or minor circulation. As the dawn gradually brightens with the approach of the brilliant orb of day, so did the facts bearing upon the doctrine

* *Prælectiones Anatomicæ*. Fol. Romæ, 1586.

† *Commentarii in Librum Galeni de humoribus*. 8vo. Parisiis, 1556.

of the great circulation, gradually concentrate themselves, until at length at the command of our illustrious countryman, the mysterious veil was forever removed, and the full blaze of the discovery was displayed in all its beauty and splendour to an admiring world.

We have already seen that the valves of the veins, which appear to have been placed there like the arrows employed by geographers in their delineations of rivers, to mark the direction taken by the stream, had been known to exist both by Arantius, and Cæsalpinus; but their structure and their use were not clearly demonstrated before the year 1574, little more than half a century before the first publication of Harvey's discovery; when Geronimo Fabricio, who is better known in the world by the name of Hieronimus Fabricius ab Aquapendente, and under whose instructions our illustrious countryman acquired that anatomical knowledge which has immortalized his name, gave the first satisfactory demonstration of their structure, and exhibited the first precise delineation of it in his engravings. But difficult as it must appear to us, with the information which this knowledge ought to have furnished, to avoid stumbling upon the truth—we find even the learned Fabricius, with the very key in his hand, unable to unlock the mysterious door; until his more gifted or, perhaps, more fortunate pupil, dissolved the charm, and threw the door which concealed the brilliant secret fully open to the world.

As the instructor of one to whom science is so deeply indebted, Fabricius is entitled to claim at

least the same portion of notice which has been accorded to his less distinguished predecessors ; although the increasing number of claimants must necessarily contract the limits which can in future be spared to biographical details.

Fabricius, the instructor of Harvey, and the first demonstrator of the structure of the valves of the veins, was born of humble parents at the little town of Aquapendente in the district of Orvieto in Tuscany, in the year 1537 ; and, notwithstanding the poverty of his parents, was sent by them to Padua ; where, in addition to the usual instruction in the classics, he studied Anatomy and Surgery under the celebrated Fallopius. Under his instructions he acquired a reputation equal to his master's, to whom he was appointed successor in the anatomical chair on his death in 1563, and continued to hold it with increasing reputation for nearly half a century ; during the whole of which he uniformly maintained a high character for eloquence and erudition, and attracted a multitude of pupils.

Among the number of these was our countryman Harvey, who visited Padua in 1598, drawn thither by the interest his lectures excited, and the celebrity he had acquired. But the claims of Fabricius to respect did not rest upon the solitary basis of his learning, his talents, or his oratory ; the benevolence and disinterestedness of his disposition established his reputation upon a more solid and durable foundation, in the esteem and affection of his fellow citizens ; and his name was inscribed, by order of the Venetian republic, upon a spacious anatomical amphitheatre which they erected for his accommodation ; conferring upon him at the same time an annual stipend

of a thousand crowns, with the honour of a statue, and creating him a knight of the order of St. Mark. Anatomy and Surgery were the objects to which he principally directed his attention, and on which his publications, an enumeration whereof will be found in the note,* were both numerous and important. His "*Opera anatomica*" contain an essay on the language of brutes well worth the attention of naturalists. The improvements which his thorough acquaintance with Anatomy enabled him to introduce into the practice of Surgery, and the consistent form which he gave to it, justly entitle him to the honourable distinction of the Father of modern Surgery. His "*Opera chirurgica*" which embrace every complaint curable by manual operations, was so much esteemed that it passed through no less than seventeen editions. It is said, but with what truth cannot be exactly determined, that he so offended his German pupils by ridiculing their manner of pronunciation, that they all deserted his school in

* 1. Pentateuchus Chirurgicus. Franc. 1592, containing five dissertations on tumours, wounds, ulcers, fractures, and luxations. 2. De Visione, Voce et Auditu, Venetiis, fol. 1600. 3. Tractatus de oculo, visûs organo. Patav. fol. 1603. 4. De Venarum ostiolis. Patav. 1603. 5. De locutione, et ejus instrumentis. Patav. fol. 1603. 6. Opera Anatomica, quæ continent de formato fœtu, de formatione avi et pulli, de locutione et ejus instrumentis, de Brutorum loquela. Patav. fol. 1603. 7. De musculi artificio, et Ossium articulationibus. Vincentia, 4to. 1614. 8. De Respiratione et ejus instrumentis. Patav. 4to. 1615. 9. De motu locali animalium, &c. Patav. 4to. 1618. 10. De Gula, Ventriculo, et Intestinis Tractatus. Patav. 4to. 1618. 11. De Integumentis corporis. Patav. 1618. 12. Opera Chirurgica, in partes duas divisa. Patav. 1618. 13. Opera Omnia physiologica et anatomica. Lipsiæ, fol. 1687. Also a complete collection of his works was published at Leyden in 1723 and 1737.

one day. Fabricius, after having raised the University of Padua to the highest pitch of reputation by his talents, died, universally regretted, at the age of 82, in the year 1619.

The discovery of the valve of the colon, formed by the inner membrane of the gut, and making the distinction between the smaller and greater intestines, was made by Salomon Albertus, Professor of Physic, at Wirtemberg, who published a volume of anatomy * for the use of learners, in the year 1583, in which he speaks of having first observed this valve, (the use of which is to prevent the regurgitation of the fœces,) first in a beaver, and afterwards in a man.

* *Historia plerarumque corporis humani partium, in usum tyronum*, 8vo. Wittebergiæ 1583, 1602, 1630.

CHAPTER X.

Progress of Botany and Pharmacy during the Sixteenth Century.—Causes which formerly retarded Botanical improvement.—Travels and labours of Anguillara, Brunfels, Fuchsius—Conrad Gesner—his difficulties in early life—his zeal for the improvement of Botany—his Experiments on the Medicinal properties of Plants—Plan of systematic arrangement—Clusius succeeds to the pre-eminence in Botany on Gesner's death—Introduces the Laurel and Horse-chesnut—Camararius founds a Medical College and Botanical Garden at Wirtemberg—Turner, Dodonæus, Cæsalpinus—The latter attempts to execute Gesner's plan of systematic arrangement.—Bauderon publishes a Pharmacopœia—Bauhins, John and Gaspard, their improvements in Botany—Fabius Colonna—His researches into ancient Botany—Gerarde—Prosper Alpinus.

BOTANY, although regarded from the very infancy of society as a study of infinite importance on account of its administering to the wants, pleasures, and appetite of man, cannot be said to have been then prosecuted as a distinct science, or regarded otherwise than as the lovely, yet lowly hand-maid of medicine, hardly of sufficient importance to attract the notice of the sage, much less to merit the attention requisite for systematic arrangement. Yet we have the testimony of Homer for the fact of its being, even in those early days, esteemed as a high honour to possess an acquaintance with the medicinal properties of herbs. With the exception, however, of the casual introduction of the

subject by the Grecian Bard, we seek in vain, for information respecting the Botany of the ancients in any but the writers on Medicine; and even in the best of these the descriptions are so vague, and the histories so confused, that it is almost impossible, at the present day, to determine the plants of which they wrote by comparison with the living specimens. During the long and dismal eclipse which followed the overthrow of the Western Empire, knowledge of every description found an asylum at the courts of the Caliphs, where medicine, as we have already seen, was successfully cultivated by the Arabian physicians; but with the exception of adding senna,* cassia, fistula,† manna,‡ tamarinds,|| and a few other simples to the scanty *Materia Medica* of the age, they made no farther progress in botanical researches than their predecessors. When literature began to revive in the west, men naturally regarded the writings of the ancients as the depositories of nearly all the then existing knowledge, and hence naturally directed their attention exclusively to the examination and elucidation of these; since, previously to making any attempt at farther progress, it was necessary to ascertain the progress already made. Yet, however rational this idea appears, the manner in which it was applied to the study of natural history was injudicious, and its effects for a time pernicious. In vain did the student in Botany turn to the pages of Pliny, of Dioscorides, and Theophrastus, in the hope of determining existing

* Cassia Senna.

† Fraximus Ormus.

† Cathartocarpus Fistula.

|| Tamarindus Indica.

plants from their crude, vague, and unintelligible descriptions, and much valuable time was lost in the idle attempt to identify among the productions of other regions, plants described by authors who wrote in Italy or in Greece. At length, a few minds soaring above the vulgar level, became convinced that the only page in which knowledge was to be found traced in characters which neither time nor climate could efface, was in that fair and lovely volume that nature ever offers to our notice.

From this period the science of Botany began to clothe itself in a new garb, and to assume a more enticing form. It was not, however, till the close of the 15th, and the beginning of the 16th century, that the science of Botany could be truly said to assume a consistent form, or shake off the accumulated cobwebs of nearly six thousand years.

The first whom we find distinguishing himself in the path of Botany during this century, is Louis Anguillara, who appears to have been the first Italian who perambulated Greece, Cyprus, Candia, Switzerland, and other countries, for the express purpose of perfecting himself in the knowledge of the properties of plants. In this he succeeded so far as to have been able, as Haller informs us, to correct the works of Dioscorides and Matthioli. On his return he was appointed Curator of the Botanic Garden, at Padua, which post he retained till his death in 1550, leaving behind him a book on the knowledge of simples, written in Italian, and published in 4to. at Venice, by Murinelli, in 1561; a Latin translation of which, by Caspar Bauhin, was printed in 8vo. at Basil, in 1593.

Amongst the restorers of Botany who preceded the illustrious Gesner, was Otho Brunsfels, who, in the year 1531, published the two first volumes of his great Botanical Work,* which, however, was not completed before the year 1536, when the third and last volume made its appearance. In 1532 he published a Medical Common-Place Book,† in which he treated of the use of drugs; and in 1534 he published his “*Onomasticon Medicinæ*.”‡ Few physicians of his age ranked higher than Brunsfels for professional skill, or general knowledge.

In 1542, Leonard Fuchsius, or Fuchs, a native of Wembling, in Bavaria, published his History of Plants, in which he chiefly copied Dioscorides, with the addition of a few remarks of his own: in this work we find him falling into the prevailing error of the age, in expecting to meet the plants of those fairer regions in which the ancients wrote, beneath the frowning skies of his own less favoured climate. Like Brunsfels, Fuchsius had early embraced the tenets of the reformation, and, finding his situation at Ingoldstadt uncomfortable on a religious account, he resigned his Professorship of Medicine, and removed in 1528, on the invitation of George, Margrave of Bareuth, (who settled a handsome salary upon him, and treated him with great respect,) to Onolezbach, where he was particularly successful in practice, especially in the

* Herbarum vivæ icones ad Naturæ imitationem summa cum diligentia et artificio efficiatæ: cum effectibus earundem. Fol. Basil. 1-2. 1531-3. 1536.

† Theses seu communes loci totius Medicinæ: etiam de usu pharmacorum. Argentina, 1534.

‡ Onomasticon Medicinæ, nomina continens omnium stirpium, &c. Fol. Argentoreti, 1534.

cure of the sweating sickness, which began to prevail in Germany, in 1529. While here, where he resided five years, he published a *Compendium*, or *Introduction to the practice of physic*; a Latin translation, accompanied with an ample commentary, of *The Sixth Book of Hippocrates*, and an *Apology against Triverius*, a physician of Louvain, recommending bleeding in the right side in pleuritis, and other inflammations of the viscera. In 1535, he accepted an invitation from Ulric, Duke of Wirtemberg, to settle at his University, at Tübingen, where the Duke wished to form an asylum for all who chose to shake off the papal yoke. Here, after a residence of thirty-five years, with great fame and success, he died on the 10th of May, 1566, in the arms of his wife, in his 65th year.

Conrad Gesner, to whom, before the days of Linnæus, Botany was principally indebted for reducing it into a systematic form, and establishing its principles upon a correct basis, was the son of a worker in hides, who fell in the Swiss wars; leaving Conrad, who was born at Zurich in 1516, in such poverty that he was obliged to go to Strasburg in the capacity of a menial servant. His master, observing his fondness for study, allowed him to follow his inclinations whenever he could dispense with his services; by which means he made such progress, that, having accumulated a little money, he went to Paris. There, having made himself master of the Classics and Rhetoric, he applied to the study of Philosophy and Medicine; but, finding his resources fail, he was obliged to return home,

and becoming a teacher, was so successful, that he was soon enabled to resume his studies at Montpellier, and afterwards take the degree of Doctor of Medicine, at Basil, in 1540 ; on which he settled in his native town, where he was appointed professor of Philosophy, the duties of which he discharged to the satisfaction of his fellow citizens for twenty-four years. He had, at an early age, imbibed a love for plants, from his maternal uncle, Friccius, and on his return to Zurich, after having taken his degree, the salary of his professorship, and the emoluments of his practice enabled him to prosecute his favourite pursuits. He founded and maintained a Botanic garden himself, in which he cultivated all the rare or valuable plants he could collect. He kept a painter and engraver constantly employed, and was a good draughtsman himself, to which circumstance may be ascribed the excellence of the figures he has left us, both with regard to the habit and fructification of the plants. He first discovered the necessity of dividing plants into classes, genera, and species, the distinguishing characters of each of which he took from the flower and the fruit. He prosecuted his researches in botany and zoology with a zeal never surpassed, and a discernment till then unknown. This zeal led him to make sundry laborious journies in quest of plants, especially in the Alpine regions ; and while he was, perhaps, the most learned naturalist of his own, or of any age, he rivalled the most experienced of his contemporaries in practical observation. To his inquiry into external characters he added a careful examination into the medicinal pro-

perties of plants ; and often endangered his own life or health in making experiments for the benefit of others. It was at one time reported and believed, that he had killed himself with a dose of two drachms of the root of *Doronicum* ; he recovered, however, and amused his friends with a history of the case. He at length fell a victim to the plague, which he caught in his professional attendance upon the sick, and terminated a life of active benevolence and scientific research in the arms of his wife, on the thirteenth of December, 1565, leaving behind him the well-earned character of having been the greatest naturalist since the days of Aristotle. His work "*De raris et admirandis herbis, quæ, sive quod nocte luceant, sive alias ob causas Lunarie nominantur,*" 4to. printed at Zurich in 1555, is a curious little work, with wood-cuts, and gives a description of Mount Pilate, or Mons Fractus, the northern extremity of the Alps, which he explored that year, together with notices of some nondescript Alpine plants. His "*Historia plantarum et vires,*" a small 4to. was published, at Basil, in 1541 : besides which, he left a large number of works, on various parts of natural history and botany. But his botanical remarks on the scientific arrangement of plants, which constitute his distinguishing merit, are chiefly dispersed among his letters, which were not published till after his death.

Charles Clusius, or more correctly de l'Ecluse, a native of Arras, in the French Netherlands, where he was born on the nineteenth of February, 1526, and a contemporary with Gesner, engaged with

the same ardour, but by no means with the same genius for the study, in the pursuit of botanical knowledge, and made attempts at a scientific arrangement of plants, which he distributed according to their size, habit, and sensible qualities. In 1576, he published an account of the rare plants which he observed in Spain,* embellished with above two hundred and twenty engravings of plants, admirably executed on wood. In several parts of this work he points out the fructification as of primary importance for determining the genera of plants—as Gesner had lately explained. This work may justly be regarded as a treasure of the vegetable productions of the southern parts of Europe. For the Alpine regions he furnished a similar work in his history of rare plants† observed in Pannonia, Austria, and the neighbouring districts, embellished with three hundred and fifty engravings on wood, of inferior merit, however, to those in the former work. They are both, however, very useful and commodious pocket companions for the travelling botanist. In 1601 they were both reprinted in folio, at Antwerp,‡ with considerable additions, consisting, among other things, of an ample treatise on *fungi*, some of Clusius's correspondence, and Ponas's account of Mount Baldus.—In 1593, at the age of sixty-eight, he was

* *Rariorum aliquot stirpium per Hispanias observatarum historia*, 8vo. Antwerp, 1576.

† *Rariorum aliquot stirpium per Pannoniam, Austriam, et vicinas quasdam Provincias observatarum historia*, 8vo. Antwerp, 1583.

‡ *Rariorum plantarum historia*, fol. Antw. 1601. This is the edition most frequently quoted by writers.

appointed to the botanical chair at Leyden, which he retained till his death. His third publication was his ten books of exotic plants,* &c., with numerous figures. This work is chiefly founded upon the observations of Garcias ab Orta, Acosta, Monardez, and Bellon, (intermixed with illustrations by Clusius himself, with an appendix on rare plants subjoined, which is entirely his own production,) and contained the first figure of the flower of the horse chesnut ever published. Clusius at length died, in his eighty-fourth year, on the fourth of April, 1609, having wielded the botanical sceptre, without a rival, from the death of Gesner, or for a period of nearly half a century. Though unpossessed of the systematic genius which constituted Gesner's chief excellence, Clusius was one of the best practical botanists of his age: discriminating plants in the happiest manner, and heightening the interest of his histories by innumerable remarks and anecdotes, which carry the reader along with him, and enable him to participate in his pleasures without encountering his toils or privations. To him we are indebted for some of the finest decorations of our gardens, and among them the *Prunus lauro-cerasus*,† and *Æsculus hippocastanum*.‡

Although much praise is due to Dr. William Turner, (an English contributor to the science of botany who flourished about this period, and published his "Herbal"§ in 1551,) for having given

* *Exoticorum libri decem*, fol. Antw. 1605.

† Common laurel. ‡ Horse chesnut.

§ A new Herbal, two parts, fol. Lond. 1551.

names to many English plants, and for his diligence in examining, and judgment in discriminating the different species—yet, in point of arrangement he retrograded to the worst days of botanical darkness, having disposed his plants according to no other analogies or affinities than those of the initial letters of their names in the order of the alphabet.

Joachim Camerarius, a learned and eminent physician of Nuremberg, where he was born in 1534, is the next candidate for fame in the field of botanical improvement: having not only established a medical college in the place of his nativity, in 1559, but formed an extensive garden for the cultivation of botany. With a view to disseminate and promote botanical knowledge, he published a work on botany and rural affairs* in 1577; and having purchased, methodized, corrected, and enlarged the collections of Gesner and Wolfe, he gave them to the world, in conjunction with the works of Matthioli,† in 1586: and in 1588 he published his *hortus medicus*,‡ in which he gave brief descriptions of a large number of plants, illustrated by many new figures. He had a few years before published a medical tract on the best means of escaping the contagion of the plague.|| He died on the eleventh of October, 1598.

* *Opercula de re rustica, quibus, præter alia, catalogus rei botanicæ et rusticæ, veterum et recentiorum, insertus est*, 4to. 1577.

† *De plantis utilissimis, Petri Andreæ Matthioli novis iconibus et descriptionibus plurimis diligenter aucta*, 4to.

‡ *Hortus medicus et philosophicus, in qua plurimarum stirpium breves descriptiones, novæ icones non paucæ, continentur*, 4to.

|| *De recta et necessaria ratione preservandi a pestis contagione*. 1583.

Of some value, but defective in arrangement, were the labours of Dodonæus, or Dodoens, who commenced with publishing his "*Historia frugum*," in 8vo. at Antwerp, in 1552, and in 1583 collected his various works into one volume divided into six parts, each of which being subdivided into five books, he denominated the whole "*Stirpium Historiæ sex Pempades*."

Andrew Cæsalpin, of Arezzo, in Tuscany, where he was born in 1519, was the first who began to execute the grand conceptions of Gesner, and who conceived the project of arranging all the plants which were then known in a regular system; taking for his distinctive characters the various forms of the fruit, modified occasionally by the consideration of other parts. This, although not the best in theory, is far from being destitute of ingenuity as a first attempt in a difficult undertaking: he particularly merits notice as the first writer who clearly distinguishes the sexes of plants. Cæsalpin imbibed his love of botany from Luke Ghinez, director of the botanic garden at Pisa, under whom he was educated. Having taken his degree of doctor of medicine, at Pisa, he obtained the professorship of anatomy and medicine there, which he retained for many years, and distinguished himself by his eloquence as a lecturer, no less than his skill as a dissector. Of his near approach to the great discovery of the circulation, notice has been already taken. Pope Clement VI entertained so high an opinion of his talents, that he invited him to Rome, where he made him his first physician. In his sixteen books of plants,*

* De plantis libri sedecim, 4to. Florentiæ, 1583.

he compares seeds to the eggs of animals, the seed serving to protect and nourish the embryo, or germ, till it had taken root. The value of this work is greatly lessened by the want of figures, and by its only containing the trivial names. In 1603 he published an appendix* to this work, which, with the former, constitutes the whole of his botanical writings. His herbarium of seven hundred and sixty plants is said to be yet in existence. His medical and philosophical works were infinitely more numerous. In his publication on the properties of medicines† he says, that he considers bleeding useful only at the commencement of fevers; and recommends clearing the stomach and bowels well out at the beginning of fevers of a putrid type. In his “Κατοπτρον,”‡ he treats of the materia medica, fevers, syphilis, &c., and says much in praise of the efficacy of guaiacum in the cure of the latter complaint. Notwithstanding his acute understanding and extensive erudition, Cæsalpinus entertained some notions which we should hardly have expected to find in so great a philosopher, such as his idea, that men were engendered from putrid matter, and his admitting, with Aristotle, the existence of intelligent motive beings, in the celestial spheres. He died at Rome in his eighty-fourth year, on the twenty-third of February, 1603.

* Appendix ad libros de plantis, 4to. Romæ, 1603.

† De facultatibus medicamentorum, libri duo, 4to. Venediis, 1593.

‡ Κατοπτρον, sive speculum artis medicæ Hippocraticæ, exhibens diagnoscendos curandosque morbos, in quo multa visuntur quæ a clarissimis medicis intacta relictæ erant, 3 vols. 8vo. Lyons, 1601-2-3.

Pharmacy does not appear to have been prosecuted with any very great success during this century; for, being so closely connected with, and even dependent upon, both botany and chemistry, it necessarily partook of the imperfections of both; and neither of these sciences had as yet assumed a consistent form, or systematic character. Among the pharmaceutists of the day, however, Brice Bauderon, a native of Charolles, merits notice for his acquaintance with this branch of medical knowledge. In 1588, he published a pharmacopœia, founded on the pharmacopœia Lyonnensis, with the observations of Catalanus on distilled waters. This book continued, for a long period, the standard work on pharmacy throughout France; and, being translated into Latin by Philemon Holland, was published in folio in London, in 1639: it has since gone through various editions both in French and Latin, but has long been obsolete from the great changes which botanical and chemical discoveries have made in pharmacy and the materia medica, during the last and present centuries. Bauderon practised physic at Maçon, where he wrote a work on the practice of medicine,* printed at Paris in 1620, when, as he tells us in the preface, he was eighty years of age, during fifty of which he had been in practice.

Among other contributors to the pharmaceutical knowledge of this period we should not omit

* *Praxis in duos tractatus distincta: in priore agitur de febribus essentialibus, tam simplicibus, quam compositis, confusis, erraticis, malignis, ac pestiferis, et symptomaticis in genere et specie, curandis: in posteriore de symptomatibus et morbis internis a capite ad pedes usque*, 4to. Paris, 1620.

to notice Andrew Baccius, a native of Ancona, and Physician to Cardinal Ascanio Colonna, (afterwards Pope Sixtus V) who possessed great genius united to great industry, and, besides a work in folio "*De thermis, lacubus, fluminibus, et balneis totius orbis*," published at Venice in 1571, has left us a treatise on poisons and their antidotes, published at Rome in 1586, 4to. another on the dignity of the Theriaca, also in 4to., printed at Padua 1583, a folio volume on the natural history of Wines, on the Wines of Italy, and the banquets of the ancients, printed at Rome in 1596, and a small duodecimo account of gems and precious stones with their medicinal virtues and uses; popular superstition attaching an almost supernatural importance to such substances, either from their beauty or their rarity.

Among the writers on botany at this period, none distinguished themselves more successfully than the family of Bauhins; of whom John, who was born at Lyons in 1541, having evinced an early prepossession for this study, was, after the completion of his preliminary education, sent at the age of twenty, to accompany the illustrious Gesner in his botanical excursions through France, Germany, Switzerland, Italy, &c. In the course of these he made a most copious collection of plants, which constituted the basis of his great work,* which he had even then in contemplation, (as we learn from his correspondence with

* *Historia plantarum universalis*, 3 vol. Fol. Ebroduni. i and ii. 1650. iii. 1651.

Gesner,) although it was not published till after his death. On his return from these excursions, he settled at Basil, where he was elected professor of Medicine in 1566, but removed soon after to Yverdun, which he also quitted some time after for Montbelliard, on the invitation of the Duke of Wirtemberg, whose chief physician he was. Here he passed the remaining forty years of his life; not however confining himself exclusively to botanical pursuits, but extending his researches to almost every branch of Natural History. In 1591 his book on plants named after the gods or saints,* was published by his brother Gaspard at Basil; a small work, as Haller observes, but a sample of that which was to follow. The *prodromus*† of his great work, in the completion of which his brother in law Henry Cherler assisted, was published in their joint names at Yverdun in 1619, and contains the rudiments of a natural classification of plants. But it is upon his "*Historia plantarum nova et absolutissima, cum auctorum consensu et dissensu circa eas*," which he completed after the labour of forty years but did not live to publish, that his claims to the rank he deservedly holds among the improvers of Botany may safely rest; for, whatever may be its errors, (and many of these resulted no doubt from the incompetence of Dr. Chabre, the editor,) it is a

* De plantis a divinis sanctisque nomen habentibus. Basileæ, 1591.

† Historiæ Plantarum generalis Prodromus. Ebroduni, 1619.

noble work.—John Bauhin died at Montbelliard in the year 1613, at the age of seventy-two years.

His brother Gaspard, being his junior by twenty years, had the advantage of his experience to assist and direct him, and made in consequence a proportionally more rapid progress in the acquisition of knowledge. Having completed his preliminary studies under Fabricius, and other distinguished anatomists, at Padua, Montpellier, and Paris, and collected in his travels a multitude of plants which had eluded the penetrating search of his brother and of Gesner, he returned to his native city Basil, in 1580, when he took his degree of Doctor of Medicine, and was appointed two years after to the professorship of Greek. In 1588 he obtained the Professorship of Botany and Anatomy, and afterwards that of Medicine, with the appointments of Chief Physician to the city of Basil, Dean of the faculty of Medicine, and Rector of the University. He had previously published a Latin translation of Rousset's book in favour of the Cæsarean operation; adding to it a multitude of cases and observations, especially the history of a woman who had successfully undergone the operation, and a description of the valve of the colon,* to the discovery of which he laid claim; all which greatly enhanced the value of his translation. In 1596 he published his *Phyto-*

* This discovery to which Bauhin lays claim on the ground of having observed it before he had read any author who spoke of it, has been already noticed as belonging to S. Albertus.

pinax,* in which he gives a general enumeration of plants described from the specimens preserved in his Herbaria. Moreover, his edition of the works of Matthioli† in 1598, contains, as Haller observes, a considerable number of plants which had not been noticed before. His catalogue‡ of indigenous plants growing in the neighbourhood of Basil exhibits the largest collection of plants growing spontaneously in a single district. Besides his botanical works, which are very numerous, he published one on Anatomy, illustrated by a volume of plates, the latter of which are chiefly copied from Vesalius, while the former contains an account of several of his anatomical discoveries; especially of the contraction of the colon in the right side, which occasions obstructions to occur more frequently there than in other parts of the intestinal canal. He also published an anatomical inquiry into the structure of the parts of hermaphrodites and other monsters.

As a systematic writer Gaspard greatly exceeded his brother, in the magnitude of his conceptions, and extent of his services. His *Pinax* forms a new æra in the science of Botany, and throws a fresh light on the subject, displaying at one view the information scattered through a multitude of works.

In the year 1592, a renewal was made of the

* *Phytopinax, seu Enumeratio plantarum ab herbariis descriptarum*, 4to. Basil, 1596.

† *Matthioli Opera quæ extant omnia*. Fol. Francf. 1598.

‡ *Catalogus Plantarum circa Basileam sponte crescentium*, 8vo. Bas. 1622.

attempt to determine the plants spoken of by the ancients, by a comparison of the living specimens with their vague and unsatisfactory descriptions, in a work* published by Fabius Columna or Colonna, a descendant of the noble House of Colonna, who was born at Naples in 1567, and led early, as Boerhaave acquaints us, to the study of the works of Dioscorides, in the hope of discovering a cure for epilepsy with which he was troubled, but for which he is said to have found the application of a caustic to the thigh by Severinus, in 1630, a much more effectual remedy than all the simples described by Dioscorides. In this work, which was surprising for a young man at the age only of twenty-four, he has most accurately determined the character of *phu* or *wild valerian*, which is, as Haller says, the plant whose root Dioscorides recommended in epilepsy, and which Colonna took according to his directions for a long time with considerable advantage, but without effecting a cure. As a reviver and improver of Botany, Colonna is eminently entitled to the praise bestowed upon him by Haller; especially for the light which his labours have thrown upon the writings of Dioscorides, and the number of plants which he has described. From having first embraced the study of Botany through necessity, he continued it from inclination, and prepared for the press, in 1606, another botanical†

* *Plantarum aliquot historia, in qua describuntur Plantæ rariores antiquorum delineationibus respondentēs*, 4to. Neapol. 1592.

† *Minus cognitarum rariorum quæ nostro cœlo orientium*

work descriptive of the rarer plants of Italy, with a farther inquiry into those which correspond with the descriptions of the ancients: but though he wrote the dedication in 1610, he did not publish it for six years after. A second part soon followed. He now began to delineate the flowers, fruits, and seeds of plants, and to take the similitude of these parts as the basis of a systematic arrangement. In his Annotations on the work of Franciscus Hernandez,* he makes still greater advances towards that admirable system of classification which Linnæus afterwards so happily adopted; taking his characters from the similarity in the form of the petals, and exhibiting an acquaintance with the pistil and the stamina; thus affording the first dawn of that system which extricated botanical science from the mass of chaotic confusion that proved an almost insurmountable bar to its improvement, and substituting method, harmony and regularity, for absurdity, contradiction, and disorder. Thus we observe in the history of Botany as in that of the discovery of the circulation, the *penumbra* precedes the approach of the shadow, and the dawn comes to announce the day.

The works of Colonna were republished in 1744 by James Plaucus, accompanied with observations by the Lyncei, (a Society of Naturalists of which he had been a member,) with a biographical sketch of the author pre-

stirpium, ecphrasis, qua non paucae ab antiquioribus descriptae disquiruntur et declarantur, 4to. Romæ, 1616.

* Adnotationes et Additiones ad Opus Francisci Hernandez, et Nardi Antonii Recchi. 1627.

fixed. As is a common case with persons who labour under a similar complaint, Colonna outlived all his faculties, and at length died at the age of eighty-three, in the year 1651.

Nearly the last writer of whom notice needs be taken during this century is John Gerarde, the author of the "*Herbal*,"* which was so long regarded as a standard work by the merely English botanist. The basis of this work was the "*Stirpium Historiæ sex Pemptades*," of Dodonæus, already spoken of, and it exhibits a remarkable, although certainly fortuitous approximation to the more modern system of arrangement according to the natural orders. It is divided into three books; the first of which is devoted to the consideration of the grasses, grain, rushes, reeds, flags, and bulbs; this arrangement, however, was not the result of any examination of the structure of the seeds, or any regard to the number of cotyledons, but solely of the consideration of the simplicity of their leaves, and a certain similarity in their general form. Hence the resemblance to the natural system is merely apparent, being as strictly artificial as the sexual system of Linnæus. The second book contains most of those plants which minister to the wants or gratifications of man, as those, for instance, which contribute to the supply of the table, the purposes of pharmacy, or to the decoration of the garden: while the third exhibits a motley group of all the *omissa* in the two first; being a

* The Herbal or General History of Plants. fol. London, 1597.

miscellaneous assemblage of forest trees, shrubs, fruit bearing plants, whether arborescent or herbaceous, resins, gums, heaths, mosses, mushrooms, and marine plants, cryptogamic and phænogamic, arranged without the slightest regard to habit, analogy, form or resemblance.

Such was the celebrated Herbal of John Gerarde, which is still highly prized by the collectors of biblical rarities, although as a book of science it is utterly worthless. John Gerarde, its author, who was born at Nantwich, in Cheshire, in the year 1545, was, if we believe Grainger, chief gardener for many years to the celebrated Lord Burleigh, minister to Queen Elizabeth, who was much attached to the cultivation of plants, and possessed the first collection of exotics in England, many of which were introduced by Gerarde. But whatever credit may be due to Grainger's account of his having filled so menial a situation, Gerarde is well known to have been a surgeon of considerable eminence, talents and erudition, residing in Holborn, in the days of Elizabeth, and having an extensive botanic garden of his own; of which he published a catalogue in 1596,* now become so rare, notwithstanding his having re-printed it in 1599, that scarcely a single copy is known to exist, besides that in the British Museum,—which is highly valuable as furnishing an authentic account of the plants at that time in cultivation in England, and was of great use to Mr. Aiton in fixing the date of the introduction of many old plants.

* *Catalogus Horti Johannis Gerardi*, London, 1596.

This catalogue contains 1,033 distinct species, or what were then regarded as such; although many were doubtless only varieties; and an attestation is subjoined, signed by that eminent botanist Lobel, stating that he had seen nearly the whole of the plants named in the catalogue, growing and flowering in Gerarde's garden. As a catalogue of the contents of one of the earliest botanic gardens in Europe, this work is highly curious, and, being so extremely rare, should be reprinted before time or accident has robbed us of the only copy almost which is known to exist, and of which a reprint would form an appropriate companion to the valuable catalogue of the royal collection at Kew. Gerarde, although by no means capable of vying with Lobel in point of erudition, contributed much to the improvement of botany in England, not only by the introduction of numerous exotics, but also by promoting the discovery of indigenous plants unknown before, and awakening a taste for the refined and beneficial pursuits of horticulture among our rude and unpolished ancestors. Hence the name of Gerarde will be remembered by every British botanist with respect, long after his Herbal has ceased to exist. From a learned historical preface, prefixed to a second edition of the Herbal in 1636, published by Doctor Thomas Johnson, (who amended many of its errors, and added largely to its contents,) we learn that Gerarde survived the publication of the first edition about ten years, and closed his existence in 1607.

Before we enter upon a new century, gratitude to another of the restorers of botany, to whose

labours both botanical and medical science are deeply indebted, forbids the name of Prosper Alpinus, or Prospero Alpini, a contemporary with our countryman Gerarde, to be passed without notice, or noticed without respect. Alpinus was the son of a physician, and junior to Gerarde by about eight years, having been born at Marostica, in the state of Venice, in 1553. He commenced life as a soldier, but, preferring the gown to the sword, and the temple of Æsculapius to the field of Mars, exchanged the army for the university, and commenced a course of medical studies at Padua, where he took the degree of doctor, in 1578. Attached to botanical pursuits, and desirous of studying the plants, as well as the diseases and manners of other countries, he obtained in 1580, through his father's interest with the Senate, an appointment to attend the Venetian Consul to Egypt, where he remained three years, during which he devoted himself with ardour to the study of plants, as well as the medical practice of the inhabitants—of both which he gave an interesting and valuable account after his return, in his book on the plants of Egypt,* (in which he set the example of making the first attempt at explaining the fructification of plants upon scientific principles,) in his dialogue respecting the celebrated Balm of Gilead,† and in his four books on the state of Medicine among the Egyptians; ‡ a

* De plantis Egypti, libri tres, 4to. Venetiis, 1592.

† De Balsamo, Dialogus. Facc. 4to. Venetiis, 1592.

‡ De Medicina Egyptiorum, libri quatuor. Venet. 1611.

work abounding in ingenious and interesting information respecting the diseases prevalent among the inhabitants, and the methods of treatment, both medical and surgical, which were in use among them. Among other remarks which are contained in this work, we find that the practice of employing opium for the purpose of intoxication, so prevalent even at the present day among the nations of the East who profess the religion of Mahomet, has not escaped his notice;* nor has he omitted to mention the state of faintness and languor to which the abuse of this narcotic reduces those who have recourse to it, and from which they are to be roused only by the exhibition of the most potent aromatics. Such was the reputation acquired by Alpinus, that, on his return to Italy in 1586, he was appointed physician to Andrew Doria, Prince of Melfi at Genoa, from whence, as his fame increased, he was recalled by the Venetian Senate, and appointed professor of botany, and curator of the physic garden at Padua. These appointments he retained till his death in November 1616, when he was succeeded by one of his sons, who had probably been his assistant in lecturing, as he became extremely deaf and infirm some years before his death.†

* De Med. Egypt. lib iv. cap. i.

† Besides the works mentioned in the text, Alpinus wrote "*De Rhapontico, Dissertatio Inauguralis*:" "*De Plantis exoticis*:" "*De præsagianda vita et morte ægrotantium*," published in 1601, and consisting chiefly of a collection and arrangement of the prognostics of Hippocrates: and "*De Me-*

On looking back to the history of the sixteenth century, and comparing it with the long series of ages which preceded it, the mind is forcibly struck with the vastness of difference between them; the faculties of man appear as if suddenly and violently awakened from an oppressive and preternatural torpor, which had long enchained them, to the due exercise of their functions; man appears comparatively as though but just created, and sent for the first time into the world with the Almighty fiat from his benevolent author, to see, to enjoy, and to understand. All the knowledge of the ages gone by appears but as empty visions of childish speculation, or superstitious delusion. To what are we to attribute this mighty, this almost incredible change? this sudden emersion from the most profound eclipse, into the rapid dawning of a brilliant day? to what, but to those two great events, which shook the empire of darkness to its very centre, and dissipated the phantasies of ignorance before the light of knowledge?—to the discovery of the art of printing, and to its necessary result, the revival, or rather the new birth of letters; and to the emancipation of the human mind from the shackles of a gross and corrupting superstition. These were the glorious events which marked the close of the fifteenth century, and whose effects began to appear in the sixteenth: the seed was sown, but it remained for the seventeenth,

dicina methodica," published in 1611, in which he endeavours to explain and revive the obsolete doctrines of the Methodist sect.

eighteenth, and nineteenth centuries to reap the rich and productive harvest. In the sixteenth century, likewise, we observe the infant germs of some of those vast discoveries, that have since added so much to the utility as well as the splendour of science, hastening to maturity, and preparing for their approaching development.

CHAPTER XI.

Progress of Medicine and Surgery during the seventeenth century—Cantharides recommended in Disorders of the Urinary Organs, by Baronius—Account of a peculiar Worm Fever at Imola by Codronchus; and of a Pleurisy with a typhoid character at Padua, by Colle—Van Helmont opposes the system of Galen, and substitutes the Chemical Practice—Cista Medica—Baronito's Account of the Peripneumony of 1636—Case of Aneurism—Royal Society—Controversy respecting Peruvian Bark—Badus—Chiffle—Malignant Fever in Sicily—Guy Patin—Sylvius' Theory of Morbid Action—Chamberlen's Obstetric Forceps—Borri, an Impostor—Introduction of Male Accoucheurs—Julian Clement—Arsenic a remedy for Cancer—Sydenham—Transfusion of Blood—William Cole an advocate for the use of Bark—Archer—Buchoff introduces burning with Moxa, in Gout—Blasius—James Young of Plymouth—Blancard—Petrified Child—Bellini, his Description of Catalepsy—Boerhaave—Amman—Colbatch—Baglivi—Cyprian—Breudel.

RAPID as we have seen the advance made in the acquisition of useful knowledge to have been since the emancipation of the human mind from the trammels of superstition, and the impulse which the newly discovered art of printing gave to the diffusion of knowledge during the sixteenth century—the further we descend the stream of time, the more forward do we find the march of improvement, the more rapidly do we observe the crops mellowing

for the harvest; and the state of medical knowledge will be found, at the close of the seventeenth century, nearly as much in advance of the point at which we have just left, as that point was beyond the state in which the celebrated school of Salernum found it in the eleventh century.

Early in this century the town and vicinity of Imola were visited with a febrile affection which appears to have been produced by worms, of which an account has been given by Baptiste Codronchus, an intelligent physician of that place, in a work published at Bologna,* in 1603, wherein he observes that the only relief to be obtained was from the expulsion of a worm, differing in appearance from those which are ordinarily found to infest the abdominal viscera. As he has not given any farther description of this worm, it would be difficult to determine how far his opinion of its being distinct from the ordinary worms of the intestines was correct, although the probability is that, from the locality of the complaint, and its not having been observed in any preceding or succeeding year, the worm which produced it had originated from ova peculiar to the waters of that place, and more plentiful than usual in that year.—Codronchus was the author of several other ingenious medical works, which will be found in the list of those recommended by Boerhaave, in his "*Methodus studii medici.*" Among these were

* De morbis qui Imolæ et alibi communiter anno 1602 vagati sunt Commentarius, in quo potissimum de lumbricis tractatur, et de morbo novo, prolapsu nempe cartilaginis mucronatæ, 4to. Bononiæ, 1603.

one on a safe and christian mode of curing disease,* with a tract subjoined on the *Cocculus Indicus*, and antimony, published near the close of the last century. These berries, which are obtained from the *Cocculus lacunosus*,† a climbing shrub growing on the rocky shores of Celebes and the Moluccas, are employed by the inhabitants of the regions in which they grow, to intoxicate fish and birds. In this country brewers have had the credit of employing them in the manufacture of their beer, in order to communicate to it an intoxicating quality, without the necessary expenditure of malt. Since, however, in an overdose they might prove destructive to life, their use has been prudently prohibited by law. In medicine, however, they might perhaps be advantageously substituted in many forms for opium, in cases where the exhibition of that drug is either questionable or inadmissible. Besides these, Codronchus wrote a treatise on poisons and their antidotes; on diseases produced by witchcraft, in the reality of which he believed; on hoarseness and other affections of the voice; on hydrophobia, of which he

* De christiana et tuta medendi ratione, cum tractatu de baccis orientalibus et antimonio, 4to. Ferrara, 1591.

† De Cand. Syst. Nat. vol. i. p. 519. It is from the root of another species of this genus, the *Cocculus palmatus*, (De Cand. l. c. 522) that *calumbo* or *columbo*, one of the most valuable of our stomachic bitters, is obtained. The *C. palmatus* is a climbing plant with a perennial root and annual stem, frequent in the shady woods of the eastern coast of Africa, between Obo and Mozambo, where it is regarded as a specific in the cure of Dysentery, and Diarrhœa; a fact noticed by F. Redi, and J. Curvo Semmedo about the middle of this century.

had seen several cases ; and on the use of hellebore in medicine, which he commends highly and advocates strongly.

The second publication of merit which attracts attention in the century we are treating of, is a quarto volume on affections of the urinary organs,* written by Theodore Baronijs, a physician of Cremona, who recommends the internal use of cantharides in such affections, (a practice which it is probable Greenveltdt learned from him) ; he also adopted the plan of curing calculous affections by means of lithontriptic liquors injected into the bladder. Baronijs was a strenuous defender of the doctrines of Galen, maintaining that it was more honourable to err with him, than to reason ever so correctly upon any other system : fortunately, however, he did not suffer this blind and irrational bigotry to mislead him in the path of practice, in which we find him frequently deserting his guide when he would have led him into error.

The city of Padua, so distinguished for its University, and the eminent talents of its several professors, in the various departments of Medical Science especially, was visited in 1610 by a pleurisy, which appears, from the account given of it by John Colle, professor of physic there, to have partaken of the typhoid character, since it did not admit of general depletion of the system by bleeding at the arm ; but readily gave way under a course of local bleeding, accompanied by a suffi-

* De operationis meiandi triplici læsione et curatione, libri duo, in quibus morbi renum et vesicæ, ex Galeni præsertim mente, pertractantur, 4to. Cremona, 1609.

cient solubility of the bowels, produced by the use of mild purgatives and occasional glysters. In a work on the practice of Medicine,* which Colle published a few years after this visitation, he gives a history of epidemic diseases, wherein he includes an account of this pleurisy. In the year 1621 he published another work,† dedicated to Cosmo II, in which he lays down a very rational system of medicine, and makes many excellent practical observations; and, in 1628, he published a treatise on Syphilis, in which he gives a concise history of the complaint and its symptoms, and lays down a plan of cure, consisting in the use of mercurial ointments and fumigation. Colle was a native of Belluno, where he was born in 1558, and, having studied medicine at Padua under Cappivaccius, and taken the degree of doctor in 1584, settled at Venice; whence, after practising fifteen years, he removed to Padua on his appointment to the medical chair. He was a voluminous writer, and author of many more works than have been now noticed. His death took place at Padua in 1631.

About this period the revolution which Paracelsus and his followers had commenced in the practice of Medicine, by the substitution of the chemical for the Galenical school of Medicine, may be considered as having attained its comple-

* *Medicina practica, sive methodus cognoscendorum et curandorum omnium affectuum pestilentium*, fol. 1617.

† *Cosmitor medicæ triplex, in quo exercitatio totius artis medicæ decisa, ac consultationes medicinales et quæstiones practicæ proponuntur*, fol. Venetiis, 1621.

tion under the daring lead of the celebrated John Baptist Van Helmont, (the descendant of an illustrious family at Brussels, where he was born in 1577,) who in 1621 published his first work* in support of the supposed property of the magnet in healing wounds.

Van Helmont appears to have exhibited early proofs of genius, and to have made such proficiency in his elementary studies that, by the time he had attained his seventeenth year, he had gone through the usual courses of philosophy at the university of Louvain; during which process he had discovered how much hypothesis, and how little real knowledge were contained in books of what was pompously called science. Such was his ardour in the pursuit of knowledge that he is said to have gone through the works of Galen twice, and of Hippocrates once, together with nearly the whole of the Greek and Arabian writers on Medicine, and to have made copious observations upon them—before the completion of his twentieth year. He appears to have formed a vague idea of the importance of experiment and induction as the only legitimate sources of solid information: but he does not seem to have methodized his ideas on the subject sufficiently to pursue that plan with full effect. Having taken his doctor's degree at Louvain, and being wearied with the unsatisfactory search after knowledge in the

* *De Magnetica Vulnerum naturali et legitima curatione, contra Johannem Roberti Soc. Jesu Theologum*, 8vo. Paris, 1621.

pages of authors, he commenced a course of travels for two years, during which he gave himself up, with the same zeal which he had formerly devoted to the study of books, to the instructions of men who pretended to an acquaintance with magic and philosophy, and obtained a smattering of chemistry from an illiterate man upon whom he stumbled in the course of his rambles. Having in 1609 married a lady of good family, and large fortune, he retired to Vilforde. There he prosecuted his researches into the products of nature without interruption. There, too, the empirical knowledge he had acquired of the properties of several chemical remedies, recalled his attention to professional practice, of which he had so long lost sight; and though he confined himself to giving advice to such as called upon him at his residence, and took no remuneration for his prescriptions, his advice was solicited by multitudes, and he boasts in his works of having cured many thousands annually. In this manner he devoted his time for the space of thirty years to the calls of humanity, and to researches in the laboratory; in the prosecution of which last he necessarily made a considerable number of important discoveries in chemistry, among which may be reckoned the spirit of hartshorn, the spirit of sulphur *per campanam*, as it was then called, and the volatile constituent* of the Spa waters, which he first named *Gas*, from the German *Geist*, that signifies *Ghost* or Spirit. Among the various new substances, or

* Carbonic acid gas.

new modifications of substances already known, which Van Helmont thus made, there were many which exerted a powerful influence over the animal œconomy, and exhibited a manifest superiority over the inert simples adopted in the Galenical practice. This served to strengthen his former prejudices against the doctrines of that school, which he in consequence attacked with renewed vigour, and considerable strength of argument, and at length completely overthrew. In his treatise "*De Humoribus Galeni*," he pointed out the gross absurdity of the Galenical hypothesis of the four elements, the four qualities with their four degrees, and the four humours, all of which he shows to have been perfectly gratuitous, and unsupported by a shadow of evidence; and he exposed the errors of the practice founded upon such unsubstantial and even fallacious assumptions. Attempting, however, like Paracelsus who preceded, and John Brown who followed him, to generalize the undigested mass of facts which he had accumulated, and reduce the whole of Medicine to a few chemical principles, he substituted a jargon as unintelligible, and theories as visionary as those which he had succeeded in expelling. He however acquired at the time considerable reputation by the numerous works which he published, and the discoveries in chemistry which he made; and his doctrines continued for a long time to preponderate in the schools of Medicine. His works are now, however, regarded only in the light of curiosities, containing a strange admixture of shrewd conjecture and absurd jargon, the

germs of many valuable discoveries buried beneath a mass of ignorance and rubbish. Some of his opinions may be found under new modifications in the speculations of later writers, and we can recognize his *Archæus* in a more refined form in the *Vis Medicatrix Naturæ* of Hoffman and Cullen, while Silvius and his followers adopted his theory of fermentations almost without alteration. To chemistry his services were of the greatest value, and he contributed largely by his labours to prepare the way for modern discoveries. He died in his sixty-fourth year, on the 30th of December 1644.

In 1626 John Hornungius, Doctor of Philosophy and Medicine, and Chief Physician to George Frederick, Marquis of Baden, &c. published a collection of Medical Letters* written by some of the most distinguished men of the age upon those subjects in which they each excelled. Among them are eight written by Gaspard Bauhin, chiefly on subjects connected with Botany, and three, concerning matters in pharmacy, from the celebrated Caspar Hoffman, professor of Medicine at Altdorff. Among the mass of facts which this curious volume contains, will be found several interesting particulars; but it is chiefly valuable for the light it throws upon the general state of Medical Science in Germany at the period of its publication.

* Cista Medica, in qua Epistolæ clarissimorum Germaniæ medicorum familiares et in re medica, &c. asservantur, 4to. Noribergæ, 1626.

Vincentine Baronius, a physician of Italy, published in the year 1636, an account of a peripneumony* which was epidemic during that year, possessing very considerable merit. His description of the complaint is full and accurate, and displays great pathological judgment: he details with clearness and precision the plan of treatment which he found to be most successful, and gives a minute description of the *post mortem* appearances on dissection. This epidemic was attended with cough, pain in the chest, dyspnoea, fever, and inextinguishable thirst. When expectoration took place early in the complaint, especially after bleeding had been carried to a due extent, the case most commonly had a favourable termination. In those cases which terminated fatally, the lungs were always found to be in an inflamed state; and serum was occasionally found poured out into the cavity of the chest.

The history of a case of aneurism recorded by Thomas Bartholine in his "*Anatomica Aneurismatis dissecti historia*," published in 1644, furnishes too instructive a lesson to surgeons to be passed without notice. It was a tumour in the leg which Antonius Vacca pronounced to be an aneurism; but the majority of opinions being against him, it was treated as an abscess, which occasioned an extension of the tumour to the toes, accompanied by gangrene, obliging them to amputate the foot

* De Peripneumonia, anno 1636, et aliis tempestatibus Maminiam aliasque regiones populariter infestante, ac nemine hactenus observata, Libri duo, 4to. Forolivii, 1636.

above the ankle, to stop the progress of mortification. On the third day after, they attempted to open the tumour, but the patient died under the operation. Although the artery was dilated to six times its natural size, the part next the skin was eroded and broken, and a mass of grumous blood, almost equalling the consistence of flesh, was found extravasated between the bellies of the gastrocnemius muscle. A nearly similar case is recorded by Freind as having occurred at St. Bartholomew's.

About the year 1645, Francis Glisson, who was Regius Professor of Physic at the University of Cambridge, (and a skilful anatomist as we shall presently see,) along with a select number of professional and other scientific friends, held weekly meetings in London for the purpose of discussing philosophical and other scientific subjects; these meetings, from consisting at first merely of a few friends chiefly of the medical profession, gradually increased in the number of their members, and the regularity of their proceedings, until at length, after the Restoration, the members were incorporated into an organized body by Royal Charter under the title of the Royal Society. Glisson, who was one of the founders and original members of this society, had been appointed reader of Anatomy to the College of Physicians of which he was a fellow, and obtained much credit by his lectures "*De Morbis partium*," which he published at the request of his colleagues. During the civil wars he went to practice at Colchester, where he resided at the time of the siege in 1648. In 1650 he published his

Treatise on Rickets,* which bears marks of sound professional judgment, and careful practical observation. His largest work† was one of a metaphysical character remarkable for the profoundness of its reasoning, and the depth and labour of its researches; it appeared in 1672. His anatomical works and discoveries will be noticed in their proper place.

Peruvian bark, which had been recently introduced into the cure of fevers in Europe, encountered, like every other novelty, whether beneficial or otherwise, considerable opposition both from the faculty and public opinion generally. Among those who took part in the controversy, thus occasioned, was Sebastian Badus, or Baldus, a native of Genoa, who was one of its most strenuous advocates,‡ and among the earliest writers in its favour. Badus had learned from a merchant of Genoa that the tree from which the bark was obtained grew in the neighbourhood of Quito; and

* Tractatus de Rachitide, seu morbo puerili *Rickets* dicto. Lond. 1650.

† Tractatus de Natura Substantiæ energeticæ, sive de vita Naturæ ejusque tribus primis facultatibus.

‡ Cortex Peruvianus redivivus, contra Plempium. 12mo. Genuæ, 1646, and Anastasis Corticis Peruvianæ seu Chinæ defensio contra ventilationem J. Jacobi Chifflet, (a) et gemitus V. F. Plempii. 4to. Genuæ, 1663.

(a) John James Chifflet, a native of Besançon, where he was born on the 12th of January, 1588, and a physician of considerable reputation, was a strenuous opposer of the use of bark, against which he published a work in 1653 which he entitled "*Pulvis febrifugus orbis Americani ventilatus*:" 4to. Lorraine, 1653: in which he strongly condemns the exhibition of this medicine, and says that intermittents stopped by it, not unfrequently return with increased severity.

that it first acquired its celebrity and its name from having been employed in the cure of the Countess of *Cinchon*, when labouring under a severe intermittent, and after her was called *Cinchona*. Badus is extremely diffuse in his account of the cinchona, explaining at considerable length its properties, and the best forms of exhibition, and giving instances of its success in the cure both of intermittent and continued fevers. The works of Badus were for the most part of a controversial character. He appears to have been a strong advocate for bleeding, which he recommended even in exanthemata.* He spent the latter part of his life at Rome under the patronage of Cardinal de Lugo, who was himself a great admirer of bark, and had procured a considerable supply from Spain in 1649.

About the same time Gaspard Bravo of Aguilar Campo in old Castile, who had been physician to Philip IV of Spain, and to the Inquisition, published a variety of works in which he treated largely of the physiology and pathology of fever, the curative effects of bleeding, purging, and sudorifics, together with the newly introduced Peruvian bark. Bravo was a graduate in medicine of the University of Valladolid, where he afterwards became a teacher of medicine and surgery. In his consultations he gives an account of the complaint which proved fatal to Philip, with the manner of his death in 1665.

* Sanguis expiatus, seu de sanguine incalescente. Genuæ, 1663. Necessitas Phlebotomiæ in Exanthematibus. 4to. Genuæ, 1663.

During the years 1647 and 1648, the Island of Sicily was nearly depopulated by the ravages of a malignant fever of which an account has been preserved by John Alphonso Borelli,* a native of Casteluovo, in the kingdom of Naples, where he was born on the 28th of January, 1608. Borelli having been sent to Rome to complete his education under Castelli, made such rapid progress in his studies, that he was invited at an early age, by the inhabitants of Messina, to visit Sicily as a teacher of mathematics, his studies having been directed to that branch of science no less than to medicine : by this means he became a resident in that island during the period at which this destructive epidemic prevailed, and enjoyed the most favourable opportunity for observing its progress, describing its symptoms, and deciding on the most judicious method of treating it, the result of which he has given in the volume cited in the note. Disgusted, at length, with his employers, Borelli quitted Messina in 1656, and accepted a Professorship at Pisa, where his lectures met with the greatest success, and he so ingratiated himself by his talents with the Grand Duke Ferdinand and Prince Leopold, as to succeed, through their interest, in gaining his election to a seat in the *Accademia del Cimento*. Here it was, in all probability, that he first conceived the design of accounting for the several functions of the animal economy upon mathematical principles, for which purpose he now applied with the utmost diligence

* Delle ragioni delle Febri maligni di Sicilia. 12mo. Cosenza, 1649.

to the task of dissection, on which subject he wrote several letters. These may be found in Malpighi's posthumous works. In 1658 he published a second treatise on the Nature and Treatment of malignant Fever, in quarto, at Pisa. Of his anatomical and physiological labours farther notice will be taken in the chapter appropriated to those branches of our subject. Borelli, in addition to his professional skill, appears to have made considerable proficiency in other departments of knowledge, and was the inventor of a diving bell, in which it was possible to descend to great depths under the surface of the water, and move about, rise, or sink lower, at pleasure. He is also said to have constructed a boat in which one or more persons might row themselves about under the surface of the water. At length, being supposed to have favoured the revolvers in an insurrection at Messina, he was obliged to quit the Neapolitan dominions, and, on an invitation from Christiana, Queen of Sweden, removed to Rome, where she resided, and where he passed the remainder of his days. He does not appear, however, to have derived much pecuniary advantage from the royal favour, since we find him, in the latter years of his life, obliged to procure a scanty subsistence by teaching mathematics at the Convent of St. Pantaleon, where he died of an attack of pleurisy, in the 72d year of his age, on the 31st of December, 1679.

About this period the celebrated Guy Patin, a physician no less distinguished for his learning than his wit, was elected dean of the faculty at Paris, and soon after succeeded the younger

Riolan, in the chair of medicine at the Royal College. He was the son of parents in humble life and contracted circumstances, residing at Hodene, near Bray, in Beauvais, where he was born in August, 1601. Being employed as a corrector of the press, in a printing-office at Paris, he had the good fortune to form an acquaintance with Riolan, a physician of eminence and ability, who, discovering the superiority of his talents, induced him to turn his attention to medicine. In this faculty he took the degree of Doctor, in 1627, and was admitted a member of the Parisian body. He continued after this to reside at Paris, where he obtained more celebrity by his wit, than emolument by his practice, being of too proud and too independent a spirit to fawn upon the great, or pander to the appetites of the low. He acquired, notwithstanding, the friendship of many persons eminent for their rank, and distinguished for their talents, especially the President Lamoignon, who enjoyed his society as a relaxation from the fatigues of public business. Such was the fluency and elegance of Patin's delivery in Latin, that his theses formed a centre of attraction for all the fashionable triflers of the French metropolis. He was a zealous defender of the honours and privileges of his faculty, and a strenuous opponent of all innovations in medical practice, and, above all, of the doctrines and drugs introduced by Van Helmont, and the chemical school of physicians. In consequence of this aversion from novelties, he entered warmly into the dispute, which at that time disturbed the tranquillity of medicine in Paris, respecting the medicinal properties of anti-

mony; he even descended to personalities in his attacks upon those who advocated its use, and drew up a long list of unsuccessful cases in which it had been employed, which he termed the *Antimonial Martyrology*. But, if he was opposed on the one hand to the preparations of the chemists, he was no less so, on the other, to the prolix and heterogeneous formulæ of those who still adhered to the old and now almost unfashionable system of Galenical practice; justly conceiving that the judicious employment of the lancet, along with the seasonable exhibition of purgatives, and a few simples, was capable of effecting more substantial good in practice than all the laboured and complicated prescriptions of the physicians. Patin appears to have projected, but without executing, a biographical history of the more distinguished physicians; which it is to be regretted that he never undertook, since, from the accounts we have of his wit, no less than his erudition and judgment, there can be little doubt it would have proved an amusing no less than an instructive volume. His letters, which were collected and published after his death, are equally distinguished for the correctness of their sentiments, and the curiosity of their remarks.

Patin died in 1672, at the age of 71, leaving a son, Charles, who was equally distinguished for his learning and talents, both as a physician and antiquary, but who, although a voluminous writer on other subjects, has contributed little from his pen to the stock of medical knowledge; few out of the forty different works in French, Italian, and

Latin, which he left behind him, being upon professional subjects, and these, with the exception of the lives of the professors at Padua,* consisting chiefly of detached treatises, such as “*Oratio inauguralis de optima medicorum secta.*”—“*Oratio de Febribus*”—“*De Avicenna*”—“*De Scorbuto, &c.*” Having, after travelling for some years, settled with his family at Padua, he was appointed there to an extraordinary professorship of medicine, whence he was transferred in 1681 to the first chair in surgery, and, ultimately in 1683, to that of medicine, in all of which he discharged his duties in so distinguished a manner, that he was promoted by the Republic of Venice to the rank of a knight of St. Mark. He died at Padua on the 2d of October, 1693, leaving a wife and two daughters, who were all distinguished for their learning and abilities.

A circumstance occurred about the middle of this century which, notwithstanding the great improvements made in other departments of medical knowledge, tended materially to impede the progress of correct pathology. This was the introduction of the hypothesis of Sylvius,† who, adopting with some slight modifications the

* Lycæum Patavinum, sive Icones et Vitæ Professorum Patavi, anno 1682, docentium. 4to. Patav. 1682.

† Francis de la Boe Sylvius was descended from a good family at Hainau, where he was born in 1614, and, after the usual school education, went to Basil. There, having studied medicine, he took the degree of Doctor, in 1637. He then visited the principal Universities of France and Germany, for the purpose of improving himself in Anatomy and Pharmacy. On his return he settled at Hainau, whence he removed to

chemical opinions of Van Helmont, accounted for every morbid action which takes place in the animal economy, upon the supposition of its being the result of chemical changes produced in the system by the preponderance of an acid or an alkali, upon the neutralization of which he imagined the whole of the cure to depend. Influenced by such fallacious reasoning, and shutting his eyes to the obvious and rational indications of cure furnished by the symptoms of the disease, Sylvius commenced his attack by the exhibition of ammonia, absorbent earths, and cordials, or acids and refrigerants, accordingly as he imagined the acid or the alkali to predominate in the system. The extent to which this doctrine, (founded, as it was, upon the most gratuitous and unsupported hypothesis, and hence frequently productive of the most calamitous results,) spread over Europe, appears surprising, and the interruption which it gave to the improvement of medical practice and pathology was considerable. Indeed it is hard to say whether Sylvius did more to promote the cause of truth by his advocacy of Harvey's doctrine of the circulation, or to impede it by his own rash and pernicious theory; and, it was, in fact, one of the great benefits which Sydenham con-

Amsterdam, where he became celebrated for his talents, and continued, till appointed in 1658 to the first professorship of Medicine at Leyden, a situation eminently calculated to rouse his genius and his eloquence, by means of which he soon attracted crowds of pupils. He was one of the earliest advocates of Harvey's doctrine, and of the means of its adoption at Leyden; his writings were chiefly controversial, and have been long consigned to oblivion. He died in 1672, at Leyden, in his 58th year.

ferred upon medicine by his labours, to expose the fallacy of such visionary assumptions, and conduct practitioners from the regions of imagination into the true path of legitimate inquiry, careful observation and rational induction.

An important improvement was introduced about this time into the practice of midwifery by the invention of an instrument for the purpose of facilitating delivery in cases of difficult parturition: this was a forceps, contrived by Dr. Hugh Chamberlen, (an eminent accoucheur in London,) his father and two of his brothers, about the year 1660, but of which, during their lives, they made the greatest possible mystery, boasting that they were able, by means of this instrument, to deliver women with the most perfect safety and dispatch, in cases in which, before this invention, it was usually necessary to sacrifice the life of the child in order to preserve that of the mother. Having established the reputation of his forceps in England, Chamberlen, in 1672, proceeded to try his fortune with it at Paris, where, instead of adding to his fame, he encountered only disgrace: for, undertaking to deliver a woman whose pelvis was too narrow to admit the passage of the child's head without mutilation, the woman died in consequence of the attempt, as Marigeau, a Parisian accoucheur of eminence, who was strongly opposed to Chamberlen's practice, had predicted. Chamberlen, to escape the disgrace of this unlucky failure, quitted Paris and proceeded to Holland, where he is believed to have been more fortunate in his practice, and to have imparted his secret for a valuable con-

sideration to the celebrated Ruysch. He then returned to London, where he accumulated a considerable fortune, not so much, if we believe his adversary Marîceau, through the success of his forceps, as through reading and translating Marîceau's "*Observations sur la Grossesse*," the best work of the kind which had then appeared. Notwithstanding this sneer of Marîceau's, which savours more of jealousy than truth, his forceps must be allowed to have contributed largely to his success; and it has been justly regarded as one of the most valuable instruments in midwifery, deservedly placing its inventor high among the improvers of his art. In 1683, Chamberlen published his translation of Marîceau's work, which was read with the greatest avidity, and has gone through a large number of impressions.

If the sixteenth century could boast of its Bovius and Paracelsus, who rivalled the Asclepiades, the Themison, and the Thessalus of antiquity, in the extent of their daring, and the presumption of their ignorance, the seventeenth also could boast of its Borri, one of the most impudent, and for a time, most successful impostors any age or country ever beheld.

This bold and blushless empiric, Joseph Frances Borri, was born at Milan about the year 1625, and educated in the Jesuits' College at Rome, where from his earliest youth he exhibited marks of a turbulent and licentious disposition; afterwards, however, affecting the character of a devotee, he declaimed against the corruptions of the age, and set up a claim to supernatural re-

velation. Afraid, however, of the power of the inquisition, he withdrew from Rome, and removed to his native town, where he became the leader of a new sect, binding his followers to secrecy by the strongest vows, and depriving them of their property, by imposing upon them the obligation of voluntary poverty. Arrogating to himself the credit of a divine mission, he took upon himself the episcopal privilege of conferring ordination by the imposition of hands. The arrest of some of his followers by the familiars of the Inquisition awoke him from his visions of theocratic importance, and fancied security, and he fled to escape the vengeance which overtook his deluded followers and menaced himself. Upon this he was publicly proclaimed a heretic, and, in default of appearing to answer the charges brought against him, was condemned for contumacy and sentenced to grace an *auto da fe* in effigy ; which was accordingly done at Rome in 1661. Meanwhile he not only enjoyed security at Amsterdam against the familiars of the *holy* office, but found in that town a new theatre for the display of his matchless effrontery, and daring impostures. Assuming the character of a physician and chemist, he laid claim to the possession of extraordinary skill, and, to succeed the better in his deceptions, set up a splendid equipage and assumed the title of Excellency. His success at Amsterdam, however, not coming up to his expectations, he thought proper to decamp from that town suddenly in the night, laden with all the gold and jewels upon which he could lay his hands, and shift the scene to Ham-

burgh, where he succeeded in imposing upon Queen Christina a belief that he possessed the secret of the philosopher's stone. Having at length exhausted her means of administering to his extravagance, and fearing an unwelcome detection of his barefaced impostures, he found it convenient to remove his quarters in time, and make Denmark the new theatre of his exploits. Here he succeeded in levying contributions upon the credulity of the Monarch, till, the death of the latter cutting off this fertile source of supply, he found it necessary to quit the Danish territories; but, while hastening to astonish the Turks with a display of the versatility of his genius at Constantinople, he was, through some mistake, arrested on the frontiers of Germany, as a political criminal. Here his good fortune abruptly deserted him, for his name being accidentally reported to the Emperor in the presence of the Nuncio, he was claimed as a heretic, and given up on condition of having his life spared, which was granted: but on reaching Rome he was condemned to abjure his errors, perform public penance, and be imprisoned for life. In prison the fame of his adventures attracted a multitude of visitors of rank; and having succeeded in restoring the health of the French Ambassador who had been given over by his physicians, he obtained, through his influence, a greater share of liberty, and was permitted to continue his chemical pursuits in the castle of St. Angelo, where he died in 1695.

About the same time that Chamberlen improved the art of midwifery by the invention of his forceps, an important revolution took place in the practice

of the obstetric art by the introduction of the fashion, among females of rank, of employing male practitioners, whose assistance it had never been usual to call for, hitherto, in any but the most urgent and dangerous cases. This revolution was effected in 1663, by the talents and reputation of Julian Clement, an accoucheur of celebrity, who contributed largely to the improvement of the art. This distinguished practitioner was born at Arles, in the department of the Rhone, in 1649, and, after receiving the first rudiments of his education there, went at an early age to Paris, where he was placed under the direction of James la Fevre, an eminent surgeon and accoucheur, whose daughter he married, and succeeded, in consequence, to her father's practice on his death. By reason of his great reputation, he was called in, in the year 1663, to the Duchess de la Vallière, who, in consequence of the novelty attending the introduction of male practitioners in such cases, is said to have removed to a private house for the purpose, and to have received him in a mask, so that he remained in ignorance of the rank or name of the person he delivered. His success in this case attracting the attention of the king,* he was appointed accoucheur to the princesses of France, with a handsome pension. This, added to his subsequent employment by other ladies of the court, and Clement's great popularity, succeeded in vanquishing injurious prejudices, and in a little time effected the complete substitution of male for female operators in all obstetric cases. One of the

* Louis XIV.

most important results that followed this great revolution in practice, was the progressive reformation of those abuses which had been suffered to accumulate through ages of ignorance and timidity. Clement, who contributed largely to these reformations, soon saw the absurdity of treating lying-in women as diseased persons, and introduced a variety of salutary regulations for the women and children, especially in abridging the time of confinement, and admitting the entrance of fresh air more freely than usual. He also simplified the mode of turning the foetus in cases of wrong presentation; and was the first to suggest the propriety of rupturing the membranes early in the labour, in cases of profuse and alarming hæmorrhage; a practice which was successfully adopted by his pupil and assistant Parees. Louis honoured him with a patent of nobility in 1684, on the express condition of his continuing to practice midwifery as long as his age and health would allow. He at length died, at the age of eighty, on the 7th of October, 1729.*

The use of arsenic as a remedy for cancer, to supersede the necessity of employing the knife for its extirpation, was again brought forward, in 1665, by Francis Blondel, a native and practitioner, of Paris, in his epistle to Alliot.† He employed in its cure a preparation of arsenicum rubrum, dissolved in nitric acid, and precipitated by means

* Such was the degree of reputation to which Clement attained in his practice, as an accoucheur, that he was sent for to attend the Queen of Spain in three successive pregnancies, the last of which was in 1720.

† *De cura Carcinomatis absque ferro et igne*, 4to. Paris, 1665.

of the superacetate of lead; the precipitate was then washed repeatedly in warm water, and its causticity farther mitigated by burning spirit of wine, with which it was mixed, till the precipitated powder became perfectly insipid. Blondel, who took his degree of doctor at the university of Paris, in 1632, having acquired considerable reputation as a classical scholar, was employed, on the death of Chartier, to assist in completing his splendid edition of the works of Hippocrates and Galen, three of the volumes of which were left unfinished. He was a decided foe to the exhibition of antimony, and all other chemical medicines, fully coinciding in opinion on this point with Guy Patin, his contemporary and coadjutor. We are indebted to him for an edition of the Statutes* of the faculty of medicine at Paris, which he published in 1660.

In 1666 our English Hippocrates, as Sydenham has been most justly termed, published the first specimen† of his revival of the inductive method of inquiring into the nature of disease, which Hippocrates had been the first to introduce with success, but of which his followers had, almost from the instant of his death, so unaccountably lost sight; for they, not content with losing themselves amidst the mists of absurd theories and gratuitous hypotheses, even corrupted, in many instances, the doctrines of their master, in order to obtain an apparent sanction for their own absurd deviations from the course he had so clearly and so

* Statuta facultatis medicinæ, 12mo. Par. 1660.

† Methodus curandi febres, propriis observationibus superstructa. Lond. 1666.

judiciously pointed out, as the only one capable of conducting them with certainty to the haven of truth. Thus succeeding practitioners, without even the exception of Galen, adopting the pernicious example of the followers of Hippocrates, allowed hypothesis to take the place of attentive observation, and idle speculation to supersede careful inquiry: and thus, in the two thousand years which intervened between the first reformation of medicine by the sage of Cos, and the second by our Dorsetshire Hippocrates,—all those cobwebs, which the former had laboured to clear away, became reaccumulated, and it required all the talents and all the perseverance of a Sydenham to clear away, even partially, the accumulated rust, and bring back the science of medicine to some portion of its primitive purity and lustre.

Sydenham, on applying to the study of Medicine, early detected the fallacy of the doctrines usually inculcated in books, and held the medical works of his time in such contempt, that, as Sir Richard Blackmore acquaints us, when consulted as to the best authors to be referred to for the purpose of acquiring a just knowledge of practice, he told the inquirer to “read Don Quixote:” from which reply, whether regarded as jocular or serious, a correct judgment may be formed of the low opinion which he entertained of, and the little regard he paid to, the doctrines then taught at the principal medical schools throughout Europe. His penetrating genius, while it led him at a glance to detect the fallacies of the existing systems, conducted him at the same time into a more rational

and philosophic mode of acquiring correct notions on the subject of pathology. Immediately on commencing practice, he became convinced, as he himself* informs us in the dedication of his Medical Observations on the History and Cure of acute Diseases, that the only means of acquiring a correct knowledge of the fundamental principles of his profession consisted in an attentive observation of the *whole* of the phenomena of disease, and vigilant and minute inquiry into the progress and fluctuations of the several symptoms, from which alone the true and natural indications of cure could be deduced; satisfied, as he metaphorically expresses himself, that were he to wander into the most devious tracts, untrodden by mortal step before, he could not, while following the guidance of nature, stray widely from the proper course. It was to febrile diseases he first applied this inductive method; and it was only after many years of close and anxious attention, that he fully satisfied himself as to their proper

* Post annos aliquot in Palæstrâ Academica insumptos, Londinum reversus, ad praxim medicam accessi, quam cum intento admodum oculo, omnique adhibitâ diligentia, curiosè observarem, mox in eam veni sententiam quæ mecum ad hodiernum usque diem crevit; *hanc scilicet artem haud rectius perdiscendum est, quam ab ipsius artis exercitio atque usu*; veroque admodum esse simile, quòd qui ad naturalia morborum phænomena oculos animumque accuratissimè maximèque diligenter advertit, in eliciendis curativis indicationibus *veris ac germinis* maxime pollere debeat. Huic itaque me methodo totum tradidi, satis securus, quòd naturam si sequerer ducem, etiam *avia terrarum peragrans loca, nullius antè trita solo*, nusquam vel latum unquam a recto tramite discederem.—Epist. dedicat. observat. medic. circa morborum acutorum historiam et curationem, 8vo. Londini, 1685.

and judicious mode of treatment. In writing a history of diseases, as he elegantly expresses himself in the preface to his Medical Observations, the writer should, for the time, dismiss from his mind every philosophic theory which might prejudice his judgment, and, with this indispensable preparation, note down in the most accurate manner possible, the whole of the natural appearances of disease, however minute—like the faithful designer, who retains in his portrait those very warts and freckles which are indispensable to the production of a perfect likeness. Yet, with that inconsistency which is an inherent blemish in our nature, Sydenham, although possessing almost intuitive knowledge of the path which he ought to pursue, and which he himself so ably pointed out, falls into the very error he condemns, and interlards his observations with such a redundancy of hypothetical jargon and visionary reasoning, as obscures, and nearly overwhelms the sound practical observations which his work contains. He commences with the Hippocratic definition of disease, as a violent effort of nature to expel the peccant matter for the renovation of the constitution.* Thus he considered plague to be an effort of nature to expel the morbid humours by means of buboes, &c. He appears in his practice, however,

* *Hiscæ rerum circumstantiis ita intimè essentiæ humanæ intertextis complicatisque, ut nemo quisquam se ab illis in solidum atque liberare, natura de ejusmodi methodo ac symptomatum concatenatione sibi prospexit, quibus materiam peccantem atque alienam, quæ totius fabricæ compagem aliter solveret, è suis finibus possit excludere.*—*Obs. Med.* p. 1-2.

to have discarded the deceptive light of hypothesis and taken nature, as he professed himself, for his only guide; regulating his views by a careful consideration of the symptoms, together with the *juvantia* and the *lædentia*; thus introducing a great practical improvement, and being led to pursue the most rational plan of cure. For instance, in small pox, he moderated the eruptive fever by cool air and antiphlogistic remedies, by which the subsequent eruption was greatly lessened, and the danger proportionably diminished; although the adoption of this plan was in direct contradiction of his own hypothesis; according to which, as a salutary effort on the part of nature to relieve the constitution, the increase of the eruption ought to have been promoted. Here, however, as in other instances, Sydenham furnished a useful example of the triumph of common sense over speculative delusion. Modern experience has fully corroborated the wisdom of his plan, which is now generally pursued both in this and other eruptive complaints. The histories which Sydenham has left us of measles, gout, small pox, and other disorders, afford striking evidence of the depth of his sagacity and the soundness of his observations, and are justly regarded as models of what medical histories should be; and his details of the Protean symptoms and deceptive appearances which hysteria exhibits, afford farther proof of the accuracy of his discrimination. Neither did the influence which difference of season exerts over disease in modifying its character, and rendering a corresponding modification in the plan of treatment necessary,

escape his penetration ; and he has even extended his observations to what he terms the epidemic constitution of different years, which he regards as likewise modifying, in a considerable degree, the character of the prevailing complaints.

The confined limits of the present work will not admit of a more detailed analysis of the peculiar merits of the illustrious Sydenham ; nor is it indeed necessary, in a history whose object is rather to mark the various stages of improvement, than to enter into a minute explanation of their nature ; to give, as it were, a passing view of the country through which it travels, rather than to dwell upon the minute topography of each particular spot. Besides, facts now crowd so rapidly upon us as to leave little room for speculation, and compel us, as we approach the goal of our destination, to generalize our views, if we would complete our journey within reasonable limits. In addition to the works already noticed, Sydenham published many others which will be found mentioned in the note.* Among these his treatise on Gout and Dropsy, dedicated to Dr. Short, is particularly deserving of careful study, as being, with his ob-

* *Epistolæ responsoriæ duæ, prima de Morbis epidemicis ab anno 1665 ad 1680, ad R. Brady ; secunda de Luis Venereæ Historia et curatione, ad H. Paman, 8vo. Lond. 1682.—Dissertatio epistolaris ad G. Cole, de observationibus nuperis circa curationem Variolarum confluentium, nec non de affectione Hysterica, 8vo. Lon. 1682.—Dissertatio de feбри putrida Variolis confluentibus superveniente : et de mictu sanguineo a calculo renibus impacto, 8vo. Lond. 1682.—Tractatus de Podagra et Hydrope, 8vo. Lond. 1683, and Schedula monitoria de novæ febris ingressu. Lond. 1686.*

servations on Calculus, the result of painful experience; Sydenham having been himself a martyr both to gout and calculus, and hence the better qualified, especially with the powers of discrimination which he so preeminently possessed, to give a correct and minute history of the peculiar symptoms attending each of those excruciating complaints. In his plan of treating gout he is decidedly opposed to venesection, whether with a prophylactic or a curative intention. He objects equally to the system of purging which has been recommended by so many practitioners both of his day and of later periods, and above all to that system of periodical purgation so idly adopted by many, and which he regards as tending frequently to augment, in place of diminishing the frequency and the severity of the paroxysms: and nearly upon the same grounds he objected likewise to the plan of diaphoretics; regarding indeed evacuations of all sorts, when carried beyond the degree necessary for health, as injurious, and resting his curative plan chiefly upon a class of medicines which appear little suited to a complaint of an inflammatory character; medicines which, as he says, gently warm the system, and either are slightly pungent, or leave a sensation of bitterness upon the tongue. Gout however has been too long the opprobrium of medicine to allow of our hastily deciding upon the merits or the demerits of any particular plan of treatment which has hitherto been proposed, from the gently stimulant system of Sydenham to the cold water of Kinglake, or the celebrated "eau médi-

cinale” of the French. The true nature of gout appears as little really understood now as in the days of Æsculapius; and although it is evident that it is closely associated with a deranged state of the digestive functions, we know too little of the nature of that connection at present to do more with safety to the patient, than consign him to the old and long-tried remedies of patience and flannel; attending to those symptoms which more particularly call for relief, and being content to alleviate where we feel it hopeless to cure. Notwithstanding his angelica roots, his wormwood, and his antiscorbutics; notwithstanding his host of remedies grateful to the stomach, purifying to the blood, and comforting to the whole system,* Sydenham himself sank under a continued succession of attacks from these invincible foes, gout and calculus, and closed his useful life in his sixty-fifth year, in December 1682; leaving behind him the character of a generous and public-spirited man, added to that of the first physician of his age.

The numerous editions of his works in almost every part of Europe, the deference paid to his authority, and the approbation bestowed upon him by almost every practical writer who has succeeded him, sufficiently attest the justice of his claim to the high reputation which he enjoys: and his character cannot be better concluded than in the glowing language of the great Boerhaave, who

* Utpote quæ ventriculo sunt pergrata, sanguini medentur, et cæteras partes foveant, confortantque. *Tractatus de Podagra*, &c. p. 205.

never omitted a proper opportunity of speaking of him, and never spoke of him but in terms of eulogy approaching almost to adulation. “Unum eximium habeo, Thomam Sydenham, Angliæ lumen, Artis Phœbum, cujus ego nomen sine honorificâ præfatione memorare erubescerem; quem quoties contemplatur, occurrit animo vera Hippocratici viri species, de cujus erga rempublicam medicam meritis, nunquam ita magnifice dicam, quin ejus id sit superatura dignitas.”

In the Philosophical Transactions for the year 1666, we meet with the first account of experiments made upon the transfusion of the blood of one animal into the veins of another, which was laid before the Royal Society by Doctor Lower—whose speculations probably suggested a repetition of the experiments upon the human body, which he had made upon animals; this was attempted, probably for the very first time, by John Denys, a graduate of the University of Montpellier, who published the result of his observations in the “Journal des Savans” for 1667. Denys was an enthusiast on the subject, and confident of success from the plan which he recommended; and, in a letter to M. de Montmor,* he acquaints him that he had, by these means, restored a lunatic to his senses, and cured a Swiss gentleman of the name of de Bonde. His patients however falling victims to his practice, notwithstanding his assertions of their cure, farther experiments upon

* Lettre écrite à M. de Montmor touchant une nouvelle manière de guérir plusieurs maladies par la transfusion du sang. 4to. Paris, 1668.

human subjects were expressly prohibited by the parliament. Some recent attempts have been made, among the other paradoxical speculations of the nineteenth century, to revive Doctor Lower's and Doctor Denys' practice; but this attempt to invade the patent rights of that illustrious pair is not likely to prove very successful, or to become fashionable any where beyond the precincts of St. Luke's.

Among the other proselytes during this century to the efficacy of Cinchona, we find William Cole, a learned and ingenious physician, who after having been educated at Oxford, (where he took his degree of bachelor of medicine in 1660, and that of doctor on the 7th of July 1666,) settled at Bristol, whence he removed to London. He had early become a convert to the utility of bark, which he employed with equal boldness and success in hysterical affections as well as intermittents. In a work which he published at Oxford on the animal secretions,* he ascribes the peculiarities of their quality to a peculiarity of structure in the secreting glands. In 1689 he published an *Essay on the Frequency of Apoplexies*; and in 1694, his new Theory of Fever, which he ascribed to a vitiated state of the nervous fluid. In another work† he strongly recommends the use of the mistletoe in epilepsy, and pretends to have cured the complaint;

* De secretione animalis cogitata, 8vo. Oxon. 1667.

† Consilium ætiologicum de casu quodam epileptico.

inserting a history of the case, given by the patient himself, in which he says he was very much relieved.

A much more useful work than Dr. Cole's treatise on the medical or the magical properties of the misletoe was a manual published in 1673 by John Archer, under the title of "*Every man his own Physician*," which, although little noticed, was a useful work for its day. From a list of his inventions subjoined to his work Dr. Archer appears to have been a man of considerable ingenuity, and to have anticipated some of the more remarkable of our modern improvements. Dr. Archer's inventions consisted first of a vapour bath for rheumatism, &c. secondly, of a conjurer fully equal to the most improved invention of the nineteenth century, which the doctor calls "An oven which doth, with a small faggot, bake, distill, boil a pot, or stew, all with the same charge of fire, time and labour." Even the celebrated Count Rumford, so distinguished for his œconomy of fuel, might perhaps have benefited by an inspection of this many-functioned oven. His third invention was that of a chariot so contrived as to be moved at pleasure by the person seated in it.

In the year 1675 the attention of the public was called to a new method of curing gout by the application of fire, which was introduced from India by Herman Buxtoff, a native of Utrecht, who had been resident for many years in Batavia. During his stay there he had been induced, while labouring under a paroxysm of gout, to employ an

Indian woman to cure him, (which she did by burning little pellets of *moxa** on the part affected,) and found such relief from this mode of applying the actual cautery, that he was induced to collect and throw into the form of a short treatise written in Dutch, a number of cases illustrative of its efficacy. This he sent to Holland to be printed, accompanied by a specimen of the moxa, and the matches made of sandalwood which were employed to light the pellets. In his treatise he speaks of the frequency of this mode of treatment, not only in gout but also in other complaints, among the Chinese and Japanese, and says the operation lasts about half an hour, and is attended with but little pain, leaving small scars which are digested out in a few days, and little eschars that heal with any common application. In his own case he says he fell into a sound sleep for twenty-four hours, after the operation, from which he awoke perfectly free from pain and swelling. On experiencing a second attack of gout, two years after, he had recourse to the same remedy with the same success. He also stated that he had known this remedy employed with equal success in the cure of schirrous tumours, nodes and lethargies. At the time this treatise of Buschoff's made its appearance in Holland, Sir William Temple was resident as British Ambassador at the Hague, and, being a martyr to the gout, was easily induced to try the new remedy; with the effect of which he was so much pleased

* The pith of a species of *Artemisia*.

that he wrote a treatise himself on the subject, explaining the manner in which the moxa was to be used, and the benefit which he himself had derived from it. Buschoff's work was also translated into English in the same year, at the instigation, as we are told by Sir William, of the professors of Gresham College, of whom however no notice was taken in either the title or the preface. For a time, like every other novelty, the moxa continued to be a fashionable remedy, but, its effects having at length been found not to equal the extravagant expectations which had been formed of it, it fell into disuse.

Gerard Blasius, a Dutch physician of some repute, published in 1687 a small volume of *Medical Observations*,* containing an account of various morbid appearances, and deformities of the body, divided into six parts, under which they are arranged methodically: many of these are extremely curious, and serve to mark the growing improvement of Medical observation and inquiry. Among other remarkable cases he mentions (page 80), the case of a boy of twelve years of age, who had been operated upon for the stone, in the month of March 1675, passing in the short space of six months, upwards of a hundred lumbrici, upwards as well as downwards, nearly the whole of which were voided alive. In the succeeding observation, he gives an account of his having met with two worms† of great length

* *Observationes medicæ rariores. Amstelodami, 1667.*

† *In viro emaciato ulnæ et quod excedit longitudinem habentes duos (vermes) aliquando reperi: coloris erant rubicundi,*

and unusual structure in the kidney of a man. Of these singular worms figures are given in the eighth of the tables, subjoined to the volume, which exhibit a manifest improvement in the art of delineating objects of natural history. Among the cases of anomalous structure, he notices a deficiency of the right kidney in one instance,* and of the urinary bladder† in a second; in a third he speaks of two stomachs,‡ and in a fourth of three kidneys.§ Blasius was the author of several other works on anatomy, both human and comparative; and, in a letter inserted in the third century of Bartholine's epistles, he lays claim to the discovery of the salivary duct, which has been erroneously assigned to Steno, but truly belongs to *him*, he having first shewn it to Steno, whose name it improperly bears.

In the year 1678, an improvement was made in the practice of amputation, by Mr. James Young, a surgeon of Plymouth, who placed a hard bolster of linen on the inside of the limb, in the direction of the main artery, then, passing a bandage round the limb, tied the ends together, and twisted them so tight as effectually to interrupt the circulation. He recommended loosening the tourniquets a little before the dressings were applied, in order to discover where astringents were most wanting. He gave an account of this plan in a scarce book published in London, in 1679,

aquoso humore turgidi, quasi ex annulis plurimis affabre junctis constare videbantur. Obs. Med. p. 80.

* P. 49.

† P. 52.

‡ P. 53.

§ P. 58.

under the name of "*Currus triumphalis e Terebintho*," in which he proposes amputating with a flap, since claimed as a discovery by two French surgeons, Verduin and Sabourin.

In 1679, Stephen, son of Nicholas Blancard, published his Medical Lexicon, a useful and laborious compilation, which has been more than once consulted with advantage in the preparation of the present work. It has gone through many editions; of which that of 1756, employed on the present occasion, has been enlarged to 1015 octavo pages, exclusively of the copious indexes, which form nearly a third of the whole. This work contains the explanation of many medical terms, such as the student may experience some difficulty in finding elsewhere.

We have already had occasion to notice the fact of a foetus having been extracted from the maternal uterus, in which it was supposed to have lain for upwards of twenty years, as attested by writers of the highest credibility, and as having occurred in France during the last century. We are called upon to speak of another, which does not rest upon equally credible authority, since it comes from an account published in 1679* by Nicholas Blegny, a quack rupture doctor, who acquaints us that the foetus was said to have been petrified, having acquired from its long residence in the abdomen, and the pressure of the other viscera, an almost cartilaginous hardness, and retaining little of the human

* Histoire anatomique d'un enfant qui a demeuré vingt cinq ans dans le ventre de sa mère, 12mo. Paris 1679.

form. Had Blegny been ever so imperfectly acquainted with the doctrines of physiology, he would have known that simple pressure was more likely to produce absorption than petrification; and the whole account comes before us in so questionable a form, that although the case already related, upon the authority of Bartholine and Paré, justifies our admitting the possibility of some real foundation existing for Blegny's report, implicit reliance should not be placed on all the statements of his narrative.

Blegny had previously published a small volume on the art of curing ruptures,* which has been frequently reprinted. His method was to cauterize the skin of the groin with nitric or muriatic acid, by which means, after the wound had closed, a firm cicatrix remained, which contributed to resist the farther descent of the intestine; it was the invention of the Prior De Cabeveres; and he instances several remarkable cures which he effected by this method; in one of the cases which he relates the urinary bladder had slipped into the ring.—Blegny was the author likewise of a work on Syphilis† which complaint was known, as he pretends, to Moses and the ancients, and may be produced by immoderate venery. He justly censures the use of astringent injections in cases of gonorrhœa, and professes to cure lues with more certainty, as well as safety,

* *L'art de guérir les hernies.* 12mo. Paris 1676.

† *L'art de guérir les maladies vénériennes, expliqué par les principes de la nature, et de la mécanique,* 2 vols. 12mo. Paris.

by means of guaicum and sarsaparilla, than by mercury.

In 1683, Laurence Bellini, who was born at Florence, in 1643, published a quarto volume* on the subject of the pulse and urine, venesection, fevers, and disorders of the head and chest; of which a fourth edition was published at Leyden in 1717, with a preface prefixed to it by the celebrated Boerhaave. It is dedicated by Bellini to Francis Redi, and is a work of considerable observation and research, although often obscure, and considerably too theoretical.

Among other valuable matter, Bellini's work contains an excellent description of that rare, singular, and mysterious affection catalepsy,† which it has fallen to the lot of so few, even of the most eminent practitioners, to witness; an affection in which the whole of the voluntary powers are suddenly arrested, and the body becomes fixed during the continuance of the paroxysm in the same attitude in which it commenced, as though, to use the emphatic language of Bellini himself, it was suddenly converted into "rigid iron, or inflexible wood:"‡ or perhaps, in stricter language,

* De urinis et pulsibus, de Missione Sanguinis, de Febribus, de Morbis Capitis et Pectoris. Opus Laurentii Bellini, dicatum Francisco Redi. 4to. Bononiæ, 1683.

† De morbis capitis. p. 593. Lugduni Batav. 1717.

‡ Rigor partium, ita ut velut ex rigido ferro aut inflexibili ligno corpus compactum videatur, neque circumverti partes ad articulationes possint, nisi magna vi, et corpus detinetur immobile in eo rigore, ac situ, in quo constituitur, dum morbi paroxysmo corripitur: hinc memorantur rigidi, jacentes, sedentes, erecto capite, detento inter digitos calamo, et hu-

the patient suddenly becomes like a breathing statue, incapable of thought, volition, or spontaneous motion, while at the same time, the vital or involuntary functions, those functions over the exercise of which the soul or thinking principle has no controul, as the respiration and circulation, go on unimpaired, and apparently unaffected by the apparent absence of the soul; marking such distinction between the vital and the sentient powers, as, if we could penetrate a little more deeply into those secrets, which it has pleased the Almighty for the present, at least, to conceal from human penetration, would at once explain that mysterious connection between matter and spirit, between the immortal soul and the perishable body, which the greatest philosophers have hitherto sought in vain. We hover as it were on the brink of discovery, while an irresistible power holds us back and pronounces "thus far, but no farther."

Closely connected with the speculations to which the description of that singular and almost incredible affection of which we have just spoken, (and which may well be termed, in the language of Bellini, "*admirabile prorsus morbi genus*,") almost unavoidably gives birth, is the subject assumed by the celebrated Boerhaave for his inaugural Thesis on taking his degree in philosophy in 1690; when, taking for his theme "*De distinc-*

jusmodi mille. Obmutescunt subitò, oculos intente detinent in objectum aliquod plane immotos, nihil sentiunt, nihil cogitant, nil recordantur, ut asserunt restituti: respirant facile, et pulsant arteriæ. De morb. cap. 1. c.

tione mentis à corpore," he ably refuted the errors of Hobbs and Spinoza. Notwithstanding this, being suspected of a latent attachment to the very doctrines whose fallacy he had so completely exposed in his Thesis, he was induced to abandon his original intention of treading in the footsteps of his father as the pastor of a village church, and, directing his attention from theology to medicine, became one of the brightest ornaments of the profession, and furnished to Holland what, speaking of our illustrious Sydenham, he said that excellent physician had exhibited before him, "*vera Hippocratici viri species*." Chemistry was the branch of study which appears to have principally engaged the young Herman's attention; he did not, however, devote himself exclusively to any one branch, but studied the works of Vesalius, Fallopius, and Bartholine, and learned dissection under Nuck. In medicine he preferred Hippocrates among the ancients, and Sydenham, whom he called the divine, among the moderns. In 1693 he took his degree of doctor of medicine, at Harderwyckin in Guelderland, at the age of twenty-five, taking for the subject of his thesis "*De utilitate explorandorum excrementorum in ægris, ut signum*." The remaining particulars of his brilliant career belong to the history of the succeeding century.

About this time the situation of the deaf and dumb began to attract the attention of practitioners; one of whom, John Conrad Amman, a native of Schaffhausen, and graduate of the University of Basil, (where he took his doctor's degree in 1687,) applied himself particularly to the

discovery of a method by which persons, unfortunately deprived of the powers both of hearing and of speech from their birth, might be taught to express themselves intelligibly, or at least to make their wants known. In this useful and humane endeavour Amman appears to have been eminently successful, as is fully evinced in his treatise on the subject, first published in Dutch in 1662, under the title of "*Surdus loquens*," and afterwards translated into Latin, and republished in 1702, with the additional title of "*Seu dissertatio de loquela*,"—a work of such high merit that Haller has not hesitated to style it "*opus vere aureum*." This judgment which is fully confirmed by the fact of no material change having been made in the directions it contains, which are universally adopted at the present day, by all who follow in the same path of professional practice. Amman's work has steadily maintained its original reputation, gone through numberless editions, and been translated into almost every European tongue.

In 1695, John Colebatch, a surgeon and apothecary of much talent and industry, published an octavo volume in London,* in which he pointed out the mischief of using tents, and injecting acrid substances into wounds. For these he advises the substitution of a powder of his own composition, dissolved in water, which, he said, served at once to check hæmorrhage, allay pain, and dispose the parts to heal. His plan exciting,

* A new light of chirurgery, 8vo.

as was natural, considerable opposition, he republished it a few years after, accompanied by a laboured vindication, and a variety of cases illustrative of its success. In 1696 he published another work,* wherein he adopted the chemical doctrines of Van Helmont and Sylvius, attributing almost every complaint to a redundancy of alkali, and maintaining that the most rational plan of cure consisted in the exhibition of acids, such as lemon juice, cream of tartar, and sulphuric acid; these were his grand panaceas, especially in the cure of gout, on which he published a treatise in the following year. His last publication was on the medicinal properties of the misletoe, of whose efficacy in epilepsy, chorea, and other convulsive disorders, he gave numerous instances from his own experience. He exhibited the powder in half drachm doses every three or four hours. The misletoe has, however, notwithstanding Dr. Frazer's attempt to revive it, sunk into complete oblivion.

Contemporary with Colbatch was Augustin Bellosté, a native of Paris, and the inventor of a mercurial composition called, after him, "Bellosté's pill," by which he is believed to have accumulated a considerable fortune. As in other nostrums, a mystery was made of its composition, which renders it impossible to speak of its merits, nor should its inventor have found a place here, but for the purpose of reprobating the illiberal and un-

† A Physico-Medical Essay, concerning alkali and acid. 8vo. London 1696.

worthy example which he, as well as Dr. Chamberlen (the inventor of the obstetric forceps, and a practitioner of such deserved celebrity) set, of concealing the preparation of a composition calculated to mitigate the amount of human suffering, in the mercenary view of turning the distresses of his fellow creatures to his own private advantage. Such conduct may suit the vendors of such worthless, if not pernicious quack compositions, as are daily imposed on the public, but is utterly beneath every respectable member of a respectable profession, and inconsistent with the fundamental principle of our christian faith, which teaches us to do as we would others should do to us. That Belloste was capable of better things, and was influenced at times by nobler feelings, has been sufficiently proved by the publication, in 1695, of his "*Chirurgien de l'Hôpital*," which has gone through numerous editions and been extensively translated ; and of which he gave a continuation a few years after,* wherein he recommended, with Celsus, the piercing of carious bones, in order to promote their exfoliation—a practice which has long fallen into disuse. Belloste blames the practice of changing the dressings of wounds too frequently, as tending to retard their healing. This work, though now neglected, possesses a considerable portion of original merit.

George Baglivi, who was born at Ragusa, in 1668, and appointed professor of the theory of medicine and anatomy at Rome, by Pope Inno-

* La suite du *Chirurgien de l'Hôpital*, 1725.

cent XII published his first work,* in 1696, in which he deplors the low condition of medicine in his time; this he imputes to the neglect of observation and experiment, the omission of studying the ancient Greek writers, Hippocrates especially, and an inordinate fondness for speculative rather than experimental reasoning. He admits, nevertheless, the progress made in Anatomy and Physiology, and the superiority of the modern theories, founded upon these bases, to the wild unsubstantial dreams of the ancients, and anticipates that when the moderns shall sedulously apply themselves to practical observation, they will surpass the ancients as far in their knowledge of the true treatment of disease, as they then did in the soundness of their theories. Inquiring whether theory or practice conduces most to a knowledge of the proper treatment of disease, he decides in favour of practice, at the same time that he recommends a combination of both. “*Quæcunque de medicina medittus fueris,*” he says, “*pro veris non habeas, nisi prius ad Lydium praxeos lapidem revocaveris: quod si repetita experientia inveneris vera, pro veris semper semper habeto. De bono aut malo vino judicare non poteris nisi gustaveris; perfectus musicus non erit nisi cecinerit; nec miles strenuus, nisi bella gesserit.*”† Notwithstanding his denunciation of hypothesis, and his recommending every thing to be brought to the touchstone of experience, Baglivi

* *De Praxi Medica ad priscam observandi rationem revocanda*, Libri IV. 8vo. Romæ, 1696.

† *Opera omnia*. 4to. p. 127.

labours under the charge of too great a fondness for hypothesis himself. He is also accused of plagiarism, and censured for credulity in suffering himself to be imposed upon by knaves pretending to labour under various affections from the bite of a tarantula, which only admitted of cure by music: on this point, however, we should be lenient to Baglivi, since we find even our enlightened countryman, Mead, at an interval of half a century later, attempting to account for this supposed phenomenon upon philosophical principles.* In 1696, Baglivi published his Dissertation, “*De anatome, morsu, et effectibus Tarantulæ*,” to which succeeded his work, “*De Fibra motrice et morbosa*,” containing his theory respecting the origin of the motion of the solids, which he ascribes to a consent between the heart and dura mater. This theory he has been accused of having borrowed from Paccioni, but he says himself,† on the contrary, that he communicated it first to Paccioni. Baglivi was the author of several other works, all of which were collected and published under the title of “*Opera Omnia*,” of which there have been many editions, and which will always merit the attention of the medical student, on account of the valuable observations therein contained.

In the last year of this century, Abraham Cyprian, a native of Amsterdam, (where, after graduating at Utrecht, he settled in practice, and continued to re-

* Mead's Works, Essay II of the Tarantula, p. 50, 8vo. Dublin, 1767.

† Opera omnia, p. 258.

side till invited, in 1692, to fill the anatomical chair at Franknaer,) published an account of an extra-uterine fœtus, taken from one of the fallopian tubes, in which it had lain for twenty-one months. Although the woman recovered from the effects of the operation, her death, a few years after, furnished Cyprian with an opportunity of examining her body, and discovering the place in which the fœtus had been lodged. Cyprian was also an eminent lithotomist, and operated, it is said, upon no less than 1400 patients. He has left an account of his method of operating in his "Cystotomia Hypogastrica," published in 1724.

The last writer of this century, belonging to this chapter, whom we shall notice, is Adam Breudel, who published a collection of Inaugural Theses, chiefly connected with the state and diseases of pregnancy, some of which are valuable; especially those "*De hydrope ovarii muliebris*," in which he gives an accurate description of that organ, and "*De nutritione fœtus in utero materno*." He was professor of Anatomy and Surgery at Wirtemberg, and an experienced surgeon.

CHAPTER XII.

Progress of Anatomy and Physiology during the Seventeenth Century—Discovery of the Lacteals, in 1622—Of the Circulation, in 1628—Of the Pancreatic duct, in 1642—Of the Lymphatics, in 1651—Of the functions of the Thoracic duct, in 1651—Of the Cystic duct, in 1654—Wharton's Adenographia—Highmore—Steno—Malpighi—Ruysch, his valuable anatomical preparations; makes a preparation of the body of Admiral Barclay, killed in the action of the 11th of June.—Meibomius discovers new vessels in the eye-lids, and projects a history of Physicians—Needham describes the membranes which inclose the fœtus—Borelli publishes remarks on the unequal powers of the eyes—Swammerdam, his zeal for Natural History; ardour in the pursuit of Anatomy; becomes hypocondriac from too close application; shortens his life by religious mortifications—Briggs explains the cause of the distinctness of vision—Genga—Peyer, describes the mucous glands of the intestines.—Bonegus—Schelbammer—Blancard—Cowper—Riely—Boulton—Bidloo.

THE seventeenth century stands proudly pre-eminent in the history of Medicine, for the importance no less than the splendour of its discoveries in Anatomy and Physiology, as well as for the host of illustrious names which appear emblazoned in its records, the tithe of whom is almost more than the limits of this work, already swoln far beyond the compass originally allotted to it, will admit of being noticed.

The first discovery of anatomical importance which demands our notice in the present century, is that of the lacteals, made, as Douglas says, "*casu magis quam concilio*," by Gaspard Aselli, or Asellius, a native of Cremona, who taught anatomy, at Paris, with great credit. This discovery, an important prelude to that of the circulation, was made by Aselli, in 1622, in consequence of his opening a dog soon after eating a full meal, by which means the lacteals of the mesentery were rendered distinctly visible as they ran across it, distended with the milky fluid of the newly absorbed chyle. Aselli, however, ignorant of their true course, erroneously described them as passing from the intestines to the liver, and confounded them with the lymphatics of that viscus. The lacteals had been, as he candidly admits, known to and spoken of by some of the ancient writers, but since they had neither been described, nor their functions demonstrated by them, and since none of the modern revivers of anatomy anticipated him in their discovery, that merit may be awarded to Aselli. Caspar Hoffman ridiculed their discovery, and Harvey even regarded them only as vessels destined for the conveyance of the lymph. Asellius mistook a collection of glands in the mesentery for the pancreas, and described this last as a new discovery, which contributed with his mistake as to the direction taken by the lacteals to involve his discovery in much obscurity.

Six years after the discovery of the lacteals, Harvey, our illustrious countryman, who had been

led, by his instructor, Fabricius ab Aquapendente's observations upon the valves of the veins, to investigate the long disputed problem of the circulation of the blood, solved the mystery which had so long baffled the penetration of the greatest men, and, having completed his masterly and unprecedented researches, astonished and delighted the world of Science by the publication, in 1628,* of the true theory of the circulation—an "*opusculum aureum*," as Haller truly observes, arranged with the most admirable perspicuity, and resting on the firm basis of experiment, unalloyed by a single particle of the base metal of speculation.†

* *Exercitatio anatomica de Motu Cordis et Sanguinis in Animalibus.* Francf. 1628.

† Professor Blumenbach estimates the quantity of blood expelled by each counteraction of the heart, at two ounces, taking the number of pulsations at seventy-five per minute. The whole mass of blood is estimated, by this experienced Anatomist, at thirty-three pounds; whence it follows that the blood completes its circulation in about three minutes and a half, or, more nearly, in three minutes thirty-nine seconds, and that a mass of fluid equal to the blood, is carried through the heart twenty-four times every hour.

Harvey, who decided on no point which he was unable to submit to the test of experiment, left the nature of the communication between the arteries and veins undetermined, but the art of injection has enabled his successors to trace the continuation of the canal uniting both systems of vessels: and the proof which remained defective has been completed by the microscope, which exhibits the circulation actually going on in the transparent parts of frogs during life: while the transfusion of the blood from the vessels of one animal to those of another, which has been successfully performed in many instances, has filled up the last link in the chain of demonstrative evidence. By these discoveries much light is thrown on the animal economy, and that which was before either wholly overlooked, or dimly seen, has become clear

We have already seen that the nature of the circulation had been progressively unfolding itself for a period of more than half a century, from the days of Servetus to those of Harvey; each succeeding anatomist adding somewhat to the mass of illumination which progressively shed its rays upon the subject, demanding only a master mind to concentrate them in a due focus, and guide their direction to the proper point. That master-mind was Harvey's, who, following up the discoveries of which his instructor was unable to understand the application, completed the magic circle of the circulation, and exhibited the blood not merely performing its minor circulation through the lungs,—not oscillating, as Cæsalpinus idly imagined, in perpetual ebb and flow through the same vessels,—but flowing in one full majestic stream from the left ventricle of the heart through the aorta, and its infinitude of ramifications and subdivisions, to every part of the frame, imparting life, health, vigour and warmth to all; taken up by the various and minute ramifications of the veins, after performing its destined functions; poured into the vena cava, and thence returned to the right auricle and ventricle of the heart, to prepare for the inhaling of

as the noon-day sun. The discovery of the circulation proves the truth of the scripture expression, that the blood is the life, since from it every part is formed and maintained. The discovery of the absorbents shews how the food is converted into blood, and those parts which have become effete are carried into the blood to be eliminated by the excretory organs.

a fresh portion of the vital fluid of the atmosphere in another passage through the lungs, previously to its resuming its vivifying circle through the system.

The more brilliant a discovery, and the more beneficial its results, the more certain is its author of becoming the butt of envy, and the object of detraction. That of the circulation too far transcended all which had preceded it, for Harvey to hope for escape from the common lot—but we have not room to dwell on the efforts of detractors whose malice has long ceased to be injurious. The triumph of truth has baffled their efforts to detract from his merits, and the claim of Harvey to the completion of one of the most brilliant discoveries history ever had to record, stands uncontestedly admitted.*

* Without the least wish to detract from the merit or originality of Harvey's great and important discovery, common justice to the ancients forbids the omission of the following passage from the *Timæus* of Plato, which appears so clearly indicative of an acquaintance with the true theory of circulation, as to leave us at a loss to conjecture whence, in that absence of anatomical knowledge, which characterized the earlier ages, such knowledge could have been attained, or how, once attained, it could have been lost, as it most indisputably was long before its recovery, or perhaps, more correctly, re-discovery by Harvey:—

“ But they (the Gods) established the heart, which is both the fountain of the veins, and the blood, which is vehemently impelled through all the members of the body *in a circular progression.*”

Can we suppose that this was one of those scattered fragments of divine revelation to man in his state of primæval innocence and simplicity, which were gradually obliterated with the other traces of his celestial origin?

In 1642 the pancreatic duct was discovered by John George Virsugus (or Wirtungus, as he is sometimes called,) a Bavarian anatomist of considerable ability, who shortly after was assassinated in his own study by an Italian, supposed to have been hired for the base purpose.

Almost at the same time, and without the slightest acquaintance with the nature of each other's researches, three anatomists of eminence in three distant countries, Sweden, Denmark and England, appear to have discovered the vessels of the lymphatics. The merit of this discovery seems to belong in a nearly equal degree to all, being, as far as each was individually concerned, an original discovery : but in point of priority the palm, we believe, ought in justice to be allotted to the Swede.

Olof or Olaus Rudbeck, son of the honest but uncourtly Bishop of Vasteras in Sweden, whose love of truth is said to have prevented his promotion, made, as early as 1649 or 1650, when but nineteen or twenty years of age, the discovery of the lymphatics of the liver, and soon after of those of other parts of the body, of which he has, we believe, given some account in his *Inaugural Thesis** the subject of which was the Harveyan doctrine of the circulation of the blood. Bartholine's discovery, which appears to have been perfectly independent of

* AD. 1652.

that of Rudbeck, was first published in 1653;* and nearly at the same time the same discovery was made, without the slightest acquaintance with the discoveries either of Rudbeck or Bartholine, by Jollife, an English physician. But although Haller awards the palm of priority to Rudbeck, he fully admits the claim of Bartholine to the merit of having traced and described the course of these vessels with the greatest accuracy.

The discovery of the lacteals, which Douglas alleges to have been fortuitous, on the part of Aselli, remained imperfect till Nicholas Pequet, a native of Dieppe, completed the labours of his predecessor by tracing these vessels to their common receptacle, the thoracic duct, which, traversing the whole length of the thorax and collecting the contents of all the lacteals in its course, pours the accumulated chyle into the veins near the heart. Previously to this discovery of the grand receptacle of the contents of the lacteals by Pecquet, who made it almost simultaneously with that of the lymphatics by Rudbeck, Bartholine and Jollife, in 1651, anatomists, misled by the description of Asellius, and the erroneous opinions of the ancients, imagined that the lacteals terminated their course in the liver. The discovery of the thoracic duct had indeed been made nearly a century before† by Eustachius, but he by no means understood the nature or importance of

* *Vasa lymphatica nuper Hafniæ in animalibus inventa et in homine*, 4to. Hafniæ, 1653.

† AD. 1563.

its functions, and the discovery was little regarded before Asellius' discovery of the lacteals. For upwards of a quarter of a century after this discovery, both Asellius, himself and all the anatomists who succeeded him, previously to the labours of Pecquet, leaning to the erroneous opinions of Hippocrates and Galen, imagined that the mesenteric veins absorbed the chyle from the intestines only to convey it to the liver, instead of pouring it, as Pecquet first ably and clearly demonstrated, into the general mass of the circulation, in order to its final appropriation to the nourishment of the body. Hence, though the praise of having known the existence of the thoracic duct must be indisputably given to Eustachius, as that of having noticed the valves of the veins belongs to Fabricius, the still greater praise of supplying that link without which the remaining portions of the chain were useless, and connecting the discovery of Asellius with that of Harvey, by demonstrating the functions of the thoracic duct, belongs as exclusively and indisputably to Pecquet, as the completion of the deficient link, which neither Servetus nor Columbus, Cæsalpinus nor Fabricius, had been able to accomplish, was the work of our distinguished countryman Harvey. Still, notwithstanding the discoveries of Asellius, Pecquet, Rudbeck, and Bartholine, (the latter of whom discovered the great trunk of the system, and likewise pointed out the error of supposing that the lacteals passed into the liver,) the question as to the identity of the lacteals and the lymphatics, remained yet in

an undecided and unsatisfactory state, till the following century, when the experiments instituted in the school of the Hunters finally and satisfactorily established the distinction between the two systems.

Connected with the anatomical discoveries of this period were those of Francis Glisson, Professor of Physic at Cambridge, who first observed the cystic duct, and, in his work on the Anatomy of the liver, published in 1654, gave a more exact description of that organ than had previously appeared. The discovery of the capsule of the *vena portarum* has also been ascribed to him, and bears his name, but erroneously, having been seen a little time before, by Pecquet and Walæus: Glisson was the first, however, to examine and describe it with accuracy.

A treatise on the glands, which was published in 1656, under the title of *Adenographia*, by Thomas Wharton, an English physician, contains a number of new and curious particulars relating to those organs, which added considerably to the stock of anatomical knowledge.

In a work on the Anatomy* of the human frame, published in 1657 by Nathaniel Highmore, we find several discoveries, for the merit of which that author has obtained a degree of credit which does not properly belong to him; as that of the great maxillary sinus which has been named,

* *Corporis humani disquisitio anatomica*, Fol. Hagæ Comitum, 1657.

after him, *Antrum Highmorianum*, although noticed before by Casserius, who had spoken of it under the name of the *Antrum genæ*. Highmore, however, was the first to suggest drawing a tooth in case of abscess within this cavity, for the discharge of the matter—which was afterwards practised by Cowper. Highmore was a graduate of Oxford, where he took his doctor's degree in 1642, and bore the reputation of a diligent anatomist and skilful practitioner.

Nicholas Steno, a Dane, described in 1662 the salivary duct belonging to the parotid glands as a discovery of his own, for which he has so far obtained credit that the duct has been named after him, although Blasius, in a letter to Bartholine, claims the discovery for himself, and says he first pointed out the duct to Steno. Steno however appears to have been the first to show the true structure of the muscular fibres of the membrane of the pharynx, which are arranged spirally in a duplex series, one ascending, and the other descending.

Amongst those who contributed to the extension of anatomical knowledge, few rank higher than the celebrated Malpighi, or Marcellius Malpighius, whose anatomical researches were extended from man to the minutest insect, and whose comprehensive mind grasped with equal vigour the colossal and the diminutive, the structure of the elephant, and the symmetry of the gnat. By his microscopic investigations he detected the glandular structure of the cortical por-

tion of the brain, and pointed out the true nature of the organ of taste. To him we are indebted for a correct knowledge of the cellular disposition of the lungs, and the formation of the substance of the liver. He also examined and described the structure of the spleen, although the discovery of the true functions of that mysterious viscus yet await the penetrating genius of a second Harvey for their elucidation. We also owe to him the first minute and accurate description of the kidneys, from which we learn the lobular nature of their structure, however we may dissent from his opinions respecting their final and minute organization. Malpighi taught that the glandular *acini* were hollow for the reception of the fluid secreted by the arteries distributed on their surface, from whence it is conveyed by an excretory duct; the union of a number of these forming the larger excretory canal. He regarded the mucous glands of the alimentary canal &c, as examples of the simplest form of glandular structure, from which the larger ones differ only by their greater complexity; being in fact only formed of an aggregate of simple ones. Ruysch denied this doctrine of Malpighi's, and maintained that these excretory ducts were merely continuations of the same tube; an opinion now generally adopted by anatomists.

In the year 1665 that distinguished anatomist Frederick Ruysch, to whose introduction of the art of making anatomical preparations with coloured injections, (which gave the freshness and appearance of life,) the science is so deeply in-

debted, published a treatise* on the lacteals and lymphatics, in which he embodied the result of his inquiries in the course of a controversy wherein he had been engaged in conjunction with Sylvius and Van Horne; the aid of his talents having been sought by these anatomists in combating the vanity of Bilsius, who came to Leyden, while Ruysch was yet only a student, to exhibit his boasted method of making anatomical preparations. In this work, in defence of Sylvius and Van Horne, Ruysch does not deny the previous notice of the valves of the lymphatics, but claims the merit of having first demonstrated and shewn how to discover them. The fame which this work obtained, procured him in the following year an invitation to fill the anatomical chair at Amsterdam, which his zeal for anatomical pursuits led him eagerly to accept: and from this period anatomy became the business of his life. The discovery of the injections which Ruysch so successfully employed in making those magnificent preparations that were the theme of universal admiration, originated with De Graaf, and was brought to farther perfection by Swammerdam; but if it was not the property of Ruysch himself, he certainly deserves the credit of having turned it to more practical and extensive account than either of the original projectors. His collection of injected bodies is described as marvellous, the finest tissue of the minutest capillary vessels being filled with colour-

* *Dilucidatio valvularum in venis lymphaticis et lacteis, cum figuris æneis*, Hagæ Comiti, 1665.

ed substances so as to represent all the freshness of youth, and to imitate sleep, or rather a paroxysm of catalepsy, in place of death. Not only did he prepare in this manner, with a beauty almost rivalling that of nature, the entire bodies of infants, but even undertook, at the desire of the States General, to inject the body of Admiral Barclay who was killed in the action of the 1st of June, 1666, between the English and Dutch fleets.* Notwithstanding the increased difficulty of injecting an adult subject, together with the injury resulting from the wounds which occasioned the admiral's death, Ruysch succeeded so admirably in his preparation, that it appeared

* This action was fought between the English fleet of only sixty sail, under the command of the Duke of Albemarle, and the Dutch fleet of ninety-one sail, carrying 4,716 guns, and 22,462 men, under the command of the celebrated Van Tromp. Such was the Duke's eagerness to engage, that, notwithstanding the fearful superiority of force opposed to him, he commenced the attack before the Dutch had time to weigh, and compelled them to cut their cables. The advantage of the weather gage, which he fortunately enjoyed, was fully counterbalanced by the circumstance of his ships being unable to use their lower deck guns. Vice Admiral Barclay (or Berkley, as he is sometimes called) led the van in the *Swiftsure*, which was captured after he fell, early in the engagement, and thus his body came into the possession of his enemies, who, with a generosity which reflects honor on them, while it bears the strongest testimony to the merit of the fallen hero, resolved to restore it in a state worthy of acceptance, to his family; and Ruysch was accordingly directed to make an injected preparation of the body, which he did in so admirable a manner, as to attract universal admiration, and procure for him a recompence from the States General of Holland, proportionate equally to the dignity of those by whom it was granted, and the merit of him who received it.

with as great perfection as that of a new born infant, every part of the injected matter preserving its softness, flexibility and consistence, as though alive. It cannot then be a matter of surprise that Ruysch's museum should have been the most magnificent ever possessed by a private individual; or that, possessing such incalculable advantages, he should have made discoveries which had eluded the researches of former anatomists. Among the parts that he examined with the greatest minuteness, was the pulmonary circulation, in which he claimed the discovery of the bronchial artery, the structure of the brain, of the ear, and of the lymphatic and glandular system.— In 1685 Ruysch was appointed professor of physic, which appointment he retained with honor and reputation till 1728 when he had the misfortune to fracture his thigh by a fall. He also held the office of superintendent of midwives, in which capacity he introduced many beneficial regulations, and many improvements in that department, especially the abolition of the practice of speedily extracting the placenta, which he believed to be expelled by means of an orbicular muscle at the fundus uteri. His publications, which were numerous, were chiefly anatomical, and many of them controversial. He enjoyed good health till he had attained his ninety-third year, when a fever closed his labours, in 1731.

Henry Meibomius, a skilful anatomist, who was born at Lubeck in June, 1630, and took his degree of doctor of Medicine at the University of Angers,

published, in 1666, a letter to Langelot,* in which he describes some vessels of the eyelids which he had recently discovered; and in this, as well as a variety of other publications, evinced an intimate acquaintance with the animal economy, and its disorders. From a letter which he published, addressed to Velschius,† he appears to have projected writing a history of Medicine, but the difficulties he encountered in collecting the necessary materials seem to have deterred him from proceeding with it. His edition at Helmstadt, in 1664, of Arnold de Boot's "*Observationes medicæ de affectibus omissis*," which had been previously published in London, derives an additional value from the notes and preface with which he enriched it.

Walter Needham, an English physician, in a work‡ which he published in 1667, gave an account of the membranes which envelope the foetus.

In 1669, Borelli, of whose medical works mention has been already made in the proper place, published a work, the object of which was to shew that the powers of the eyes are unequal in most men, objects appearing much more distinct with one eye than the other. In the following year his treatise "*De motionibus naturalibus a gravitate pendentibus*," appeared as a prelude to his great physiological work "*De motu anima-*

* De vasis palpebrarum novis.—Epistola ad virum celeb. Joelem Langelotum. Helmstadt, 1666.

† De medicorum historia scribenda.—Epistola ad G. H. Velschium. Helmstadt, 1669.

‡ De formatu foetus, 8vo. Lond. 1667.

lium," which was not published till after his death. In this work, the first volume of which, in 4to., appeared in 1680, dedicated to Queen Christina, (at whose expense it was printed,) he gave an excellent account of the manner in which fish row themselves forwards by the tail. The object of this work was to explain the animal functions upon mechanical principles. He supposed the muscular fibres to be vesicular; that the vesicles become distended by a portion of the nervous fluid entering and fermenting with the blood they contain—thus producing a swelling of the muscle, and shortening of its fibres. He measured the individual force as well as the collective power of the fibres, which is immense, according to his estimate. He explained how this power was influenced by the manner in which the fleshy fibres are inserted into the tendons. The power of the heart in propelling the blood he estimated at one hundred and eighty thousand pounds weight. Although far from correct in these and other calculations, his general doctrines kept their ground for a long time among medical men, and the effect of medicines was long believed to be capable of explanation upon mechanical principles.

John Swammerdam, of whom mention has been already made, (when we were speaking of Ruysch,) as the original inventor of that admirable composition which Ruysch employed in making his anatomical preparations—had been in early life a zealous anatomist and an able entomologist; dissecting, with a dexterity peculiar to himself, the most minute insects, with instruments of his own con-

trivance. He had been designed by his father, who was an apothecary at Amsterdam, for the church; but his inclination led him to the study of medicine and natural history, especially entomology, his passion for which last induced him, almost while a child, to make many excursions for the purpose of enlarging his collection of winged insects. During his residence at Leyden, he particularly distinguished himself by his close attention to anatomy, and his singular skill in making preparations. He was a fellow pupil of Regnier de Graaf's under the celebrated Van Horne, who was professor of anatomy there—and made great progress in the art of dissection. Previously to taking his degree, he visited Paris for improvement, and there formed an acquaintance with Steno: and on his return to Leyden he took his doctor's degree, selecting for his thesis the subject of respiration. It was at this period he began to employ his composition for injecting subjects, by means of which he rendered visible the capillary arteries and veins of the face. Religious scruples, however, prevented his persisting long in the use of this valuable invention. His vanity, however, preponderating over his religion, led him to communicate his discovery to Ruysch, who availed himself, as we have already seen, most amply of its great advantages. In 1672 he published his work on the female uterus,* which has been frequently reprinted. Intense application

* *Miraculum naturæ, seu uteri muliebris fabrica notis in J. V. Horne prodromum illustratum*, 4to. Lugd. Batav. 1672.

now made him hypochondriac, and unfit for society; and in this state he became so impressed with the reveries of Antoinette Bourignon as to plunge into the depths of mysticism. He so injured his constitution by mortifications, that he died in 1680, at the age of 43.

Regnier de Graaf, the fellow-pupil of Swammerdam, and the friend and intimate acquaintance of Ruysch, was the original contriver of those injections which Swammerdam brought to perfection, and Ruysch employed to so much advantage. De Graaf had been led, in the first instance, to employ these injections for the purpose of discovering the motion of the blood in the vessels; and to accomplish this object, he contrived a new species of syringe, by means of which he was able to inject the vessels with some high-coloured substance, which clearly pointed out the course of the circulation. De Graaf's injection not, however, keeping the vessels permanently distended, but, from its too great thinness, making its escape after a time, fell into disrepute; till Swammerdam, observing the cause of the defect in de Graaf's preparation, proposed to remedy it by employing some cetaceous matter as a vehicle for the colouring matter, such as, though sufficiently liquid, while warm, to penetrate the most minute ramifications of the vessels, becoming solid when cool, would keep them permanently distended without the possibility of loss from percolation and evaporation. In the attempt to accomplish this we have already seen how fully he succeeded; and the light which this

invention has thrown upon anatomy, together with the important discoveries to which it has led, sufficiently attest its great importance.

De Graaf, the original introducer of this valuable auxiliary to dissection, was the son of an architect residing at Schoonhove, in Holland. Here Regnier was born, on the 30th of July, 1641, and commenced his studies at Leyden, but took his doctor's degree at Angers, in France, about the year 1665; having published three years before, when only at the age of twenty-two, a Dissertation on the subject of the pancreatic juice, which gained him great credit. On his return to Holland he settled at Delft, where his success in practice gained him much envy. He published three Dissertations on the Organs of Generation in both sexes, which involved him in a controversy with his quondam fellow-pupil, Swammerdam. He died in August, 1673, at the early age of thirty-two, leaving behind him several works which are much esteemed, and were published at Leyden in 8vo. 1677 and 1705.

In 1674 Willam Briggs, a native of Norwich, and fellow of Bennet College, Cambridge, published a Treatise on the Eye,* in which he pointed out a discovery he had made, that in the *tunica retiformis*, which is contiguous to the vitreous humour, the expanded filaments of the optic nerve lie in the most regular order, and that they continue to retain this order when afterwards

* Ophthalmographia, sive oculi ejusque partium descriptio anatomica, cui accessit nova visionis theoria. 8vo. Cantab. 1674.

united in the nerve, and preserve it unbroken till they reach the brain. The chrystalline humour had been previously discovered to be a double convex lens, formed of two segments of unequal, but not perfectly spherical spheres, as the ancients imagined. Thus Briggs's discovery explains why all the images are carried so distinctly to the brain. Briggs also described in this work the ducts by which moisture is conveyed from the glands in the angles of the eyes, to lubricate those organs, and facilitate their motion within their orbits.

Bernardine Genga, the author of an anatomical work,* published at Rome in 1675, was a strenuous advocate for Harvey's Doctrine of the Circulation, the discovery of which he stoutly maintained to have been made by Father Paul Sarpi, though he adduces no adequate evidence in support of the fact. Through his exertions, however, Harvey's doctrines gained ground in Italy. Genga had the courage to charge Hippocrates with committing errors in the treatment of several surgical cases, such as the veriest tyro among the moderns would be ashamed of.

The first accurate account of the glands, which secrete, in a state of health, a mucous fluid for lubricating the intestines, and which, in cases of the exhibition of purgatives, or occurrence of diarrhœa or dysentery, furnish the extraordinary discharge which takes place,—was given by John Conrad

* "*Anatomia chirurgica*," or "*Istoria dell' ossa e muscoli del corpo umano, con descrizione de' vasi.*" Roma, 1675.

Peyer, a native of Schaffhausen, in a work* on this subject, first published at his native town in 1677. He also gave an account of some experiments he made upon the pancreas, in a tract contained in the *Bibliotheca Anatomica* of Le Clerc and Magnetus.

A valuable work on Morbid Anatomy, containing a vast number of dissections of persons who had died of the effects of disease, and throwing great light upon the hidden causes of illness, was published in 1679, at Geneva, in two volumes, folio, by Theophilus Bonetus.

Some useful observations on the tongue, salivary glands, larynx, diaphragm, intestinal canal, mesentery, thoracic duct, lymphatics, kidneys, &c. were made by Christopher Gunther Schellhammer, for some time professor of physic at Jena, in his Introduction to Physiology, published at Helmstadt in 1681; in his book on Hearing, published at Leyden in 1684, and in his Dissertation on the Origin of the Lymph, &c. inserted in the *Bibliotheca Anatomica*.

Blancard, of whom notice has already been taken for the compilation of his useful Medical Lexicon, gave to the world, in 1688, a duodecimo work on Anatomy, containing a number of judicious observations compiled without acknowledgement from others: he describes in it about two hundred cases, most of which are extremely curious.

The *Myotomia reformata* of William Cowper,

* Exercitatio anatomico-medica de glandulis intestinorum. Schaffhausæ, 1677.

an eminent surgeon of London, which first appeared in 1694, although by no means to be compared with the later works of Albinus, far exceeded all the similar works which had preceded it, not only by its superior accuracy, but by its containing descriptions of many muscles not before noticed. The publication of his "*Anatomy of the Human Body*," in folio, at Oxford, in 1697, involved him in a controversy with Bidloo, a Dutch anatomist, in consequence of his having employed impressions of the plates belonging to Bidloo's great anatomical work, to illustrate it, to which he added forty figures engraved from drawings of his own. We shall find occasion to return to this controversy presently, when we come to notice Bidloo and his works. In this splendid work Cowper greatly improved and corrected Bidloo's descriptions of the figures, and added some ingenious and valuable anatomical and surgical observations of his own. Cowper, in the course of his Reply to Bidloo's complaints of the dishonourable piracy of the plates of his work—described two new glands in the urethra, which have been named after him—*Cowper's mucous glands*. Cowper, also, was the first who gave a representation of the thoracic duct as it is found in the human subject; preceding anatomists having taken their delineations only from brutes.

In a work on the anatomy of the brain, published in 1695, by Henry Riely, a fellow of the College of Physicians, we find several remarks on matters which had escaped the observation of Willis and

Vieussens, with an account of the animal functions, muscular motion, &c.

In 1697, a theory of muscular motion which corresponds so closely with that of Borelli, that it would almost appear to have been borrowed from it, was broached by Richard Boulton, a practitioner of medicine and surgery in Chester, in his "*Treatise on the cause of Muscular Motion*," published in duodecimo. He therein attempts to account for it on the supposition of its arising from a commixture of the blood and nervous fluid, in certain glands, which he supposed to exist in the fleshy parts of the muscles. The learned theorist forgot, however, the necessity of demonstrating the actual existence of such glands, or those particulars in the properties of the blood and nervous fluid which predisposed them on admixture, any more than before admixture, to excite muscular motion; and he talked of the nervous fluid as though its existence were real, not hypothetical.

Notice has been already taken of Godfrey Bidloo, a native of Amsterdam, a professor of anatomy and surgery at Leyden, where he published in 1698, a quarto volume of observations upon the animalculæ found in the liver of sheep. It was his great anatomical work which he published in folio, with 105 magnificent anatomical plates, in 1685, that occasioned the controversy with Cowper already spoken of. Cowper, it appears, purchased 300 impressions of Bidloo's plates for the illustration of his own work; of this fraud Bidloo very naturally complained in his "*Gulielmus Cowper citatus coram tribunal* : 4to. Lugd. Batav.

1700,"—to which Cowper replied in his "*Eucharistia*," a work still in great request, but in which he made a most impotent attempt at defence, by pleading, that he had believed the plates, when he purchased them, to have belonged to a projected work of Swammerdam's, who, being dead, could not benefit by the plates, or publish the work to which they were designed as an accompaniment. Had this really been the case, the fact should have been frankly avowed in the work to which he annexed them, and he should not have waited for Bidloo's charge, three years after, to wring the tardy admission from him. But the fact, as Cowper well knew, was quite the reverse ; and it must in candour be admitted, that the conduct of our countryman does not allow of the slightest justification, notwithstanding the service he did to science, in correcting a multitude of errors and inaccuracies in Bidloo's explanations. Many of these (which were so gross as to call forth the animadversions of Bidloo's own pupil de Ruysch,) arose from his greater attachment to the pleasures of the table than to study. With all its faults, however, it was a valuable and splendid work.

CHAPTER XIII.

Progress of Botany, Pharmacy, &c. during the Seventeenth Century—Basil Besler—Campi—Brunn's *Systema Materiae Medicæ*—Hoffman, his hostility to Chemical Medicines—Charas; publishes an Analysis of the Theriaca; an account of his Experiments on the Viper; and his *Pharmacopæia*—Tillingius—Tournefort—London *Pharmacopæia*—Dales' *Pharmacologia*.

THE science of botany did not advance with anything like the rapidity which might have been expected from the stimulus given to it by Gesner, Clusius, Cæsalpinus, and the other great reformers of science during the preceding century; and the seventeenth century hardly furnishes anything of importance to notice. The first work which deserves to be mentioned is the splendid folio "*Hortus Eystensis*," published by Basil Besler at Nuremberg in 1612, and containing 356 atlas folio plates, on which were delineated 1533 figures of plants, engraved at the expense of Conrad, the Bishop of the Diocese. It contains, however, a large proportion of errors.

In 1623, Michael and Balthasar Campi, two eminent botanists of Lucca, deeply read in the works of Dioscorides, as well as those of the Ara-

bians, compared their descriptions with the plants kept under their names in the shops, and thus detected and pointed out a multitude of errors; and, in their excursions over the Alps and Appenines, made discoveries of many new plants. In their "*Nuovo Discorso*," published in 1623, they gave an investigation of several of the ingredients in the composition of the mithridate, and in their "*Specilegio Botanico*," published in 4to in 1650, endeavoured to prove the *Cinnamomum* of the moderns to be altogether different from that spoken of by Dioscorides.

In 1630, a pharmaceutical work,* which has gone through repeated editions, from the high estimation in which it was held, was published at Basil, by John James Brunn, a physician of that place, and successively professor of anatomy, botany, and the practice of medicine. An edition with notes by Gerard Blasius was published in 1680.

Caspar Hoffman, in 1667, published his work on officinal medicines, with a dedication to the celebrated Guy Patin, wherein he discusses the question of the comparative merits of law and medicine, and, after quoting Aristotle, decides the question of superiority in favour of medicine. In his preface, he finds great fault with the chemical and mineral preparations employed in medicine, observing that the distilled waters,

* *Systema Materiæ Medicæ, continens Medicamentorum simplicium et compositorum seriem ac sylvam, methodo mendiendi ac formulis remediorum præscribendis accommodatum.* 8vo. Basil, 1630.

from the empyreumatic impregnation which they more or less contain, are injurious to weak stomachs; that the distilled oils are dangerous, from exciting inflammation; and that spirit of wine, from whatever substance it may be obtained, is injurious to the liver, and produces dropsy, and other fatal maladies in a few months: as for antimony, arsenic and mercury, he regards them as so many deadly poisons; the clear inference from all which is, that the unsophisticated productions of the vegetable kingdom are alone to be relied upon: and he concludes with a solemn adjuration to his reader, whether a physician, a surgeon, or an apothecary of sound understanding, to confide, next to God, in his own conscience, which directs him in the words of Hippocrates, "*Morbis non obesse, si prodesse non possis.*"

In 1668, Moses Charas, an eminent chemist and pharmacist, published a chemical analysis of the *Theriaca Andromachi*, with a distinct account of its several ingredients. He had the good sense to discover that it derived all its activity from the opiates and spices which entered into its composition, and hence decided, contrary to the received opinion, that age impaired its qualities. In the following year he published an account of new experiments on the viper, in which he states that a drop of the oil of tobacco introduced into a wound given to that reptile is instantly fatal to it. He gives a neat anatomical description of the viper, not omitting the poison bag, but maintains that its contents only become poisonous through their irritation of the animal—in direct contradiction

to the experiments of Signor Redi, which prove that when taken from a *dead* viper, and introduced through a quill into a wound, it is as malignant as when introduced through the fang of the enraged reptile. In the same year he published his "*Pharmacopée Royale, Galénique et Chymique*," in two vols. 8vo. which, with his other works, has gone through many editions.

In 1679, Matthias Tillingius published his account of the plant * whose roots yielded the rhubarb of the shops, in a small thick 4to volume, with a portrait of the author, which does not appear to flatter his beauty, and two figures of rhubarb, in praise of which little can be said. In the preface he gives a curious account of the various productions of China; and in the first part of his work gives a learned disquisition respecting the origin of the name of the plant; after which, in the succeeding chapters, he explains its characters, uses, and the cases to which it is applicable.

In 1684, the celebrated Pitton de Tournefort published his elements of botany; but nevertheless botany continued to languish as a science, till kindled into animation by the Promethean touch of the great Linnæus.

The edition of the pharmacopœia,† published in 1689 by the College of Physicians, marks the scanty improvement which had been made in this

* Rhabarbarologia, seu curiosa Rhabarbari disquisitio, 4to. Francofurti ad Mœnum, 1679.

† Pharmacopœiæ Collegii Regalis Londoni remedia omnia, succincte descripta. Editio altera priori castigatior et auctior. Lond. 1689.

important department of medicine ; a fact which will be readily admitted, when it is stated that the ingredients in one preparation, the famous *Theriaca Andromachi*, exceed sixty in number. Among the contents of this Pharmacopœia it will be sufficient to notice the *Aqua Lumbricorum*, prepared from *living* earth-worms, digested in a water-bath ; the *Aqua omnium florum* prepared from cow's-dung fresh-gathered in May ; and the *Aqua Ranarum*, from living frogs caught in the beginning of April.

The pharmacologia of Dr. Samuel Dale,* first published in 1693, serves in a great degree to redeem the absurdities of the Pharmacopœia of the college, and contains a mass of useful facts connected with the Materia Medica and Pharmacy, which would not disgrace a later period and more enlightened age.

* Pharmacologia, seu Manductio ad Materiam Medicam. 4to. Londoni, 1737 : Editio tertia.

CHAPTER XIV.

Progress of Medicine and Surgery during the Eighteenth Century—Boerhaave appointed to the Medical Chair at Leyden : reputation of his works—Deventer : his Improvements in Midwifery—Astruc, his Theory of Digestion : his opinion respecting the contagious Character of the Plague : his Work on Syphilis : doubts respecting Inoculation : Treatise on Tumours : on Diseases of Females : considers Conium as possessing little efficacy in Cancer—Arbuthnot : his Paper on the Equality of the Births of both Sexes—Mead : his Treatise on Sol-lunar Influence : on Poisons : on Plague—Amand : his obstetric Net—Boccacini revives the Practice of Magatus—Anel : his Apparatus for sucking Wounds—Lommius : his medical Observations, and Treatise on Fevers—Heister—Allen—Oliver : remarkable Case of Somnolence—Chicoyneau : his Doctrine of the non-contagious Nature of the Plague—Cheyne—Van Swieten—Freind—Douglas—Barry : cold Water a Cure for Disease—Blondel's Controversy with Turner—Denys—Chamberlen's Forceps—Clifton—Breslaw Fever—Boerhaave—Haller—Bruhiere—Cosme—Doevoren—Huxham—Medical School at Philadelphia—Rush—Legitimacy—Heberden—Galvanism—Le Blanc—Buchan—Vaccination—Cullen—Brown—Gregory—Galvani.

THE march of improvement advances with such an accelerated pace, and the acquisitions made by knowledge in Medicine, as well as every other department of useful learning, crowd so upon us as we descend the stream of time, and near the confines of our own days, that a regard to confining the present volume within reasonable li-

mits renders it necessary to abridge the transactions of the eighteenth century within the narrowest practicable limits, and to terminate the work with the close of the century. Such, indeed, are the multitude and importance of the several discoveries and improvements made during this century, that in place of crowding the whole promiscuously into the concluding portion of a work, which many readers may consider as sufficiently voluminous without addition, they deserve, at least, to be made the subject of a distinct volume; and many of them might be fairly regarded as entitled to separate volumes for their individual consideration.

Upon the death of Drelincourt, who had long filled the chair of Medicine at the university of Leyden, in 1701, the celebrated Herman Boerhaave, of whom mention has already been made in a former chapter, although but recently established in practice, and hardly as yet known to fame, was nominated his successor. Before obtaining this appointment, which gave him ample scope for the display of his great and splendid talents, Boerhaave, like others when first entering on practice, had more leisure than, perhaps, was altogether desirable. To a mind however, constituted like his, this was, after all, no disadvantage. He accordingly embraced the opportunity thus afforded him of reviewing the various medical theories which had been broached from time to time, out of which he digested one which superseded all the rest, and held an undisputed sovereignty in the medical world for upwards of

half a century. On taking possession of the chair, to which he had been so recently and so honourably appointed, Boerhaave delivered an inaugural dissertation, in which he recommended the study of the works of Hippocrates, whom he chiefly admired for the correctness of his descriptions—the patience with which he attended to the indications of nature, and the peculiarities of the constitution, to which he frequently committed the cure of disease with little interference on his own part—and the unsophisticated honesty with which he recorded the termination of his cases, whether favourable or the reverse. Such was the rapidity with which Boerhaave rose to fame after his appointment as professor, that in 1703 we find him receiving an invitation from Groningen to accept a professorial chair in that university, an honour which he declined from a patriotic preference for his own country, and for the university which had first distinguished him by the cheering encouragement of its approbation: while the university, to mark the sense entertained of the preference thus strongly evinced, raised his salary as professor. It was about this time that he published his *Discourse on the Use of Mechanical Reasoning in Medicine*. His compositions, which were drawn up with care, and distinguished for the classic purity of their style, being published, contributed not a little to the extension of Boerhaave's reputation. On the death of Peter Hotton, the curator of the university garden, in 1709, the professorship of botany which he had held, together with the care of the garden, was given to

Boerhaave, who delivered on this occasion his third admirable oration,* in which he explained the utility of attending to facts and observations as the best means of promoting medical knowledge; and the superiority of simplicity in prescription over the complex and unscientific formulæ then in vogue. In this year, also, appeared his celebrated Aphorisms,† a work which has been deservedly admired and universally read: and upon which Van Swieten, who had been his pupil for a period of nearly twenty years, afterwards published his Commentaries. About the same time, also, he published his "*Institutiones Medicæ*."‡ Such was the reputation of these works, that, besides going through numerous editions, they were translated into almost every European language, and even into Arabic.

Boerhaave had now attained to the meridian of his fame, and pupils flocked to him from every part of the world. He lectured on the theory of medicine, on botany, and on chemistry, with a clearness and precision that at once surprised and delighted Haller, who attended him for two years, and pronounced him to be one who "*vix sui parem habuit*," was almost unequalled.

In 1713, on the death of Bidloo, he succeeded him in the professorship of the practice of medi-

* Oratio quâ repurgatæ medicinæ facilis asseritur simplicitas.

† Aphorismi de cognoscendis et curandis morbis, 8vo. Lugd. Batav. 1709.

‡ Institutiones rei Medicæ in usum annuæ exercitationis domesticæ.

cine, and in 1718, he succeeded to the professorship of chemistry ; so that he was now at the head of every branch of medicine ; and the number of his pupils had increased to such a degree, that the town of Leyden was almost insufficient for their accommodation. In addition to the enormous demands upon his time, occasioned by this multiplicity of occupations, he was in the habit of being applied to for advice in difficult and dangerous cases by physicians in almost every part of the world. He was, as Macquer testifies, the most eminent chemist of his age, next to Stahl. His luminous understanding and comprehensive genius threw a flood of light upon every subject which he touched, and to his view of chemistry we are indebted for the finest and most methodic analysis of vegetables. Equally exalted was his moral character, and he was not unaptly compared to Socrates, to whose bust he bore a striking resemblance. Piety formed the distinguishing feature of his character, and devotion constituted his daily exercise. Athletic in form, and constitutionally prone to obesity, he accustomed himself to exercise on horseback, and to passing as much of his time as possible in the open air ; by which means, united with the most rigid abstemiousness in diet, he had been enabled to sustain uninjured the enormous fatigue of his professional avocations : but his disposition to corpulence at length gaining ground, and his constitution beginning to yield to the assaults of time, he found himself obliged to resign his professorships of botany and chemistry in 1729. On that occasion he delivered

his valedictory oration;* in which he gave a sketch of the more prominent features of his life, and spoke with gratitude of the favours he had received both from individuals and from those of his own profession, who had received his improvements with more kindness and less opposition than usually fell to the share of innovations. Never, indeed, had so great a revolution been effected in science with so little opposition as that accomplished by the talents of Boerhaave.—In the year preceding the resignation of his professorships, he had been chosen a foreign associate of the Royal Academy of Sciences, at Paris; and in 1730 he was elected a fellow of the Royal Society of London. In this year he was also again appointed rector† of the university, and at the expiration of his office delivered, as usual, an oration, in which he urged the necessity of attending to nature in the cure of disease.

His latter years were chiefly passed in domestic relaxation at a country seat he possessed near Leyden; where he was attacked, towards the close of 1737, with difficulty of breathing, accompanied with a sense of suffocation, which progressively increased; and, within a short period of his death, he perceived a strong pulsation on the right side of his neck, which he ascribed to a polypous concretion in the aorta, but which more probably resulted from aneurism. He expired, at length,

* Oratio cùm cathedræ Chemiæ et Botanices valediceret, 4to. Lugd. Bat. 1729.

† He had filled this office before, in 1714, and, on laying it down, read his Discourse, "*De comparando certò in physis.*"

with the utmost calmness, in the midst of his family, on the 23d of September, 1738, exhibiting a brilliant example to the world of the confidence and tranquillity with which a christian philosopher can resign his soul in the hands of him who gave it.

In the same year in which Boerhaave commenced his noble and useful career as a professor at Leyden, Henry Deventer, one of the most successful and distinguished surgeons and accoucheurs of his day, gave a Latin translation of a work upon Midwifery,* which he had previously published in Dutch, in 1696.

In this work he detailed the various and important improvements which he had introduced into practice; and thus, as well as by his various mechanical contrivances for correcting or preventing bodily deformity in young subjects, he acquired great reputation. Deventer, finding that the secret of the forceps, introduced into practice by the Chamberlens, could only be purchased at a most extravagant price; and being aware, besides, of the injurious effects resulting from too frequent an employment of instruments in delivery, declaimed warmly against it, and contended that the greatest obstacle to delivery arose from the oblique position of the uterus. In all cases of difficulty, where the head was not forced down so low as to render it impracticable, he passed his hand into the uterus, turned the child, and delivered it by the feet: but if this was impracticable, he introduced his left hand into the back

* *Operationes Chirurgicæ, novum lumen exhibentes obstetricantibus*: 4to. Lugduni Batavorum, 1701.

part of the vagina, and gradually pushed back the *os coccygis*, so as to enlarge the aperture. Where, however, the pelvis proved to be distorted, even this would be as ineffectual as Chamberlen's forceps; and both the doctrine and the practice have been long since exploded. Indeed, Deventer's plan of forcing back the bone was liable to a multitude of objections, since, with whatever delicacy it was done, it was apt to produce either abscesses, or incurable lameness: and it would almost appear as if some such accidents had occurred to Deventer himself in the course of his practice, for latterly he admitted the necessity of sometimes opening the head of the foetus, and extracting it with a crotchet.

When an arm presented, Deventer was in the habit of passing his hand into the uterus, and delivering the child by the feet, in place of the cruel and unnecessary practice recommended and indeed adopted by former writers, of twisting the limb violently off. Deventer taught his pupils to distinguish between true and false labour pains, and to allay the former by gently evacuating the bowels by mild injections, and eccoprotic medicines, together with the exhibition of one or more of his anodyne pills, the composition of which he kept secret for a long time. These were all important improvements, and gave him a decided preference over Mariçeau, who was almost his immediate predecessor.—In 1724, he published a second part of his work on midwifery;* and both

* *Uterius examen partium difficilium: Lapis Lydius obstetricum: et de necessaria cadaverum incisione*, 4to. Lugd. Bat. 1724.

parts were republished together in 1733, accompanied with many improvements and additions, after having been translated and published in most parts of Europe. A posthumous work of Deventer's on Rachitis, or Rickets, which is well spoken of by Haller, appeared in 1739.

In the year 1702, John Astruc, a native of Sauve, in lower Languedoc, who had just taken the degree of bachelor of medicine, at Montpellier, published a dissertation "*De motus fermentativi causa*," followed soon after by a variety of controversial pieces on the nature of digestion, which he accounted for upon the hypothesis of a fermentation excited by a peculiar kind of leaven—contrary to the doctrine of Pitcairne and others, who ascribed it to the mechanical action of the abdominal and other muscles. Astruc was raised to the chair of medicine and anatomy at Toulouse in 1710, but, on the death of Chatelain in 1716, returned to Montpellier, to supply the vacancy thus made. In 1720, he published a work on hydrophobia, and, in the following year, a treatise upon epidemics, and especially the plague;* in which he asserts the contagious nature of plague in opposition to other writers. He imagined that there was a certain analogy between the plague and syphilis. About this time a violent dispute arose on the question of privileges between the physicians and surgeons in Paris, in which Astruc took an early and active part, and shewed, from

* Sur l'origine des maladies épidémiques, principalement de la peste. 1721. Dissertation sur la contagion de la peste. 8vo. Toulouse, 1724.

documentary evidence, that it had been the practice formerly for the surgeons to undergo an examination by the physicians, before they obtained a licence to practice. Astruc received an invitation to Poland in 1729, from Augustus II, who made him his physician : but, finding his situation there unfavourable to his studies, he returned to France, and settled in Paris, where, in 1730, he received the appointment of consulting physician to the King, and soon afterwards succeeded Geoffroy in the chair of medicine, at the royal college, where his high reputation brought him numerous pupils. In his memoirs for a Natural History of Languedoc,* he gave a particular account of the mineral waters of Balaruc : and, in 1743, he was admitted a member of the faculty at Paris. His "*Tractatus pathologicus*," published in 1745, and "*Tractatus therapeuticus*," in 1748, although favourably received, and eminently popular at the period of their appearance, have now become obsolete. It was his treatise on syphilis† which raised his fame to the full meridian of its splendour, and has inseparably linked his name with that insidious and formidable malady. This was seized with avidity at the first moment of its appearance, and was soon translated into all the modern languages, as containing the most complete history, description, and treatment of this complaint which had ever appeared. In the first part of this work he adopts the opinion that the complaint was of recent origin, perfectly

* Mémoires pour l'Histoire Naturelle de Languedoc, 1737.

† De Morbis venereis, Paris, 1740.

distinct from leprosy, and every other disease, and had been introduced by the companions of Columbus from America ; an opinion which had been the subject of much controversy at that period. The negative, indeed, had been attempted to be maintained by passages taken from ancient writers, which were imagined to point out the malady in question from their containing some obscure notice of one or two symptoms, remotely resembling those of syphilis. Astruc, in opposition to these arguments, brings forward evidence * to show that it was first introduced into Spain from Hispaniola and other West Indian islands, towards the close of the fifteenth century, whence it was carried in 1495 to Naples, during the war between Ferdinand of Arragon and the French, by some Spanish troops who had brought it from Hispaniola, and by whom it was communicated to some of the Neapolitan women with whom both French and Spaniards had intercourse, accordingly as, during the fluctuations of war, the town changed masters. In this manner did this odious complaint spread to both armies, and thence gradually extended, through the medium of commercial intercourse, nearly over the whole world.

In a former chapter of the present work, will be found some discussion of this question, in which it is considered in the same point of view which Astruc has taken of it ; and what tends strongly to corroborate the opinion now

* De Morb. vener. lib. i. cap. 10, 11.

pretty generally admitted of its West Indian origin, and modern introduction, is a circumstance stated by Meade, in his Essay on the origin of the small pox, where he says he had been assured by a merchant who had been long residing in Russia, that syphilis was hardly known in that extensive empire before the time of Peter the Great, in consequence of the trifling intercourse which subsisted between them and foreigners. But no sooner had Peter adopted the resolution of visiting other parts of Europe, and sending numbers of his subjects abroad to learn trades and manufactures, than these people, on their return to their own country, carried back with them this dreadful contagion, which spread rapidly, and raged more severely, in consequence of the severity of the climate.*

For the cure of this formidable complaint Astruc placed his entire dependence upon mercury, which he regarded as a specific, and preferred its introduction into the system by friction with the ointment to every other mode.

Shortly after the appearance of his celebrated work on syphilis, Astruc published anonymously doubts respecting small pox inoculation,† addressed to the faculty : and in 1759, a treatise on tumours,‡ followed by two letters, the first of which treats of the composition of certain remedies, and

* Meade's Medical works, page 231.

† Doutes sur l'inoculation de la petite vérole, proposés à la Faculté de Paris.

‡ Traité des tumeurs, avec deux lettres, la 1^{ère}. sur la composition de quelques remèdes, la 2^{de}. sur la nature et les succès des nouveaux remèdes qu'on propose pour la guérison des maladies vénériennes : 1759.

the second, respecting the nature and success of certain new remedies proposed for the cure of syphilitic affections. This is a work of very considerable merit, in which he treats at large of hydatids voided either by stool, or discovered in the liver of those who had died of atrophy. He is one of the first writers who exposed the absurdity of the popular opinion which refers moles and other accidental marks to the force of the maternal imagination exerted during pregnancy. His work on the disorders incident to females,* together with that on midwifery,† which he did not live to complete, have both been translated into English. Astruc had tried *Conium* without effect in cancerous cases, and was of opinion that it was indebted for its reputation to the circumstances of pseudo-schirrous tumours yielding to its exhibition: an opinion which has been confirmed by modern experience.

Astruc was a constant attendant at the meetings of the faculty at Paris, and a strenuous assertor of their rights. As a writer he united great depth of genius with extensive research. His mind possessed singular activity, and his constitution was naturally robust, by which means he was enabled to continue his medical practice nearly to the moment of his death, which took place in his eighty-second year, on the 5th of May, 1766.

In 1704, a paper by the celebrated Dr. John Arbuthnot, (whose name the muse of Pope contributed to immortalize,) on "*The constant regu-*

* *Traité des Maladies des femmes*. 12mo. 6 vols. 1761.

† *L'art d'accoucher réduit à ses principes*.

larity which is observed in the births of both sexes," was read before the Royal Society, and published in their Transactions. In this paper the doctor states that, notwithstanding the existence of a small excess on the part of the male births, he conceived that, from the more hazardous nature of their occupations, their numbers at an adult age were nearly equal : from which he necessarily concludes that polygamy is contrary to the law of nature, as well as of justice ; and that it has a direct tendency to lessen the increase of the human race ; thus furnishing an unanswerable reply to the arguments in favour of polygamy, contained in Madan's celebrated "*Thelypthora*." This paper gained Arbuthnot his election as a member of the Royal Society, and procured him a greater intimacy with the more eminent literary characters of the day. Shortly after, he was called in to attend Prince George of Denmark, in consequence of the indisposition of the Prince's own attendant, Doctor Hannes, and, by his success in this case, attracted the notice of the Queen, who in consequence appointed him one of her physicians in ordinary. His practice, however, does not appear to have been very extensive, since he found leisure for an excursion to Paris, on his return from which he distinguished himself chiefly as a wit among the constellation of geniuses, who adorned the Augustan reign of Queen Anne. In 1731, he published the first edition of his "*Essay on the Nature of Aliments*," and in the following year, his Essay "*On the influence of air on the Human Body*," both of which are founded upon the then prevailing

doctrine which had been introduced by Boerhaave. A second edition of the former of these essays appeared in 1732, with the addition of "*Practical Rules of Diet in the various constitutions and diseases of the Human Body.*"

Arbuthnot had been for many years a martyr to asthma, upon which dropsical symptoms supervened; this induced him to remove to Hampstead in the hope of finding relief: disappointed however in this object, he returned to his house in town, where he at length sank under his sufferings on the 27th of February 1735.

During the whole of his painful and distressing illness the natural serenity of his character, supported by that spirit of piety which had so pre-eminently distinguished him through life, never once deserted him; and was strikingly displayed, in conjunction with his ardent love of virtue and detestation of meanness, in his very latest letters. The disinterestedness and generosity of his character, added to the amiability of his disposition and conviviality of his humour, justly endeared him to all his friends, by whom his death was long and deeply deplored; and Swift, one of the number, feelingly complains of being in illness

"Far from his kind Arbuthnot's aid,
"Who knew his *art*, but not his *trade*,"—

thus elegantly complimenting him at once on his professional skill, and generous disregard of gain.

Richard Mead, the descendant of a considerable family in Buckinghamshire, and born at

Stepney in August 1673, published in 1704, his treatise on sol-lunar influence, founded upon the principles of planetary attraction, then recently demonstrated by the researches of Sir Isaac Newton. The influence of lunar attraction in modifying the complaints to which humanity is subject, is an opinion which has prevailed more or less among men in every age and every country ; and is doubtless one of those opinions which man carried with him, from the original cradle of his race, within, or upon the confines of the tropics, (where the influence of lunar attraction both on the animal and vegetable creation is too striking to have escaped the dullest comprehension,) through the various migrations and dispersions of his species over the face of the globe. Mead, in the tract in question, furnishes many striking proofs of the reality of this sol-lunar influence in disease, observing—"when I was physician to St. Thomas' Hospital during the time of Queen Anne's wars with France, several of the sailors of our fleets were brought thither, and put under my care for epilepsy,"—most of whom were new men, who had contracted the disease by frights either in sea engagements or in storms. But the moon's influence was so visible on the generality of them, at the new and full, that I have often predicted the attacks of the fits with tolerable certainty. And T. Bartholine* tells a story of an epileptic girl, who had spots in

* *Historia Anatom. Gentur.* 2. Hist. 72.

her face, which varied both in colour and magnitude, according to the time of the moon. So great, says he, is the correspondence between our bodies and the Heavens.”* Without entering into abstruse reasoning to establish a fact notorious to all who have ever resided within the tropics, and paid the slightest attention to the operations of nature, it may be sufficient to observe that more than one medical writer of our own days has remarked the striking coincidence between the instant of death and the turn of the tide, especially in those places which are nearest to the equinoctial ; and, even in Italy, the effect of the moon upon shell fish was noticed, as far back as the time of Augustus, by Horace ; to the accuracy of whose remark that “*Lubrica nascentes implent conchyliæ Lunæ*,”† every West Indian can bear testimony, it being well known to them that the sea eggs, a species of esculent echinus, much esteemed, are not in a condition for the table at any other time than the full of the moon. The writer of this has himself experimentally ascertained the influence of the moon upon vegetation, by accurate observation upon the growth of the *convolvulus dissectus* during the increase and decrease of that planet. Indeed every lunation within the tropics furnishes in its four quarters an epitome of the four seasons, more or less

* The Medical Works of Richard Mead, M.D. 8vo : Dublin. 1767, page 132.

† Sat. 4. Lib. 11. vers. 30.

strongly marked as we approach to or recede from the line, and more or less decided in its effects in proportion as the operation of each is strengthened or counteracted by the influence of the sun dependent upon his position in the zodiac. This modification of the lunar influence the writer particularly experienced in the course of some experiments he made upon the medicinal properties of the bark of the root of the *Piscidia Erythrina*, or Jamaica dog-wood, the tincture prepared from which, when gathered at the full moon in April, when the tree is in flower, but before the foliage has appeared, is a powerful anodyne and narcotic, while the tincture prepared from the bark gathered in July or August, is utterly or almost utterly inert.

Mead had published before, in the year 1702, his mechanical account of poisons, which was so well received that an abstract of it was inserted in the Philosophical Translations for the following year : it consists of a series of six essays, on the viper, spider, scolopendra, scorpion, and bee ; on the tarantula ; on the mad dog ; on poisonous minerals and plants ; on opium and laurel water ; on venomous exhalations from the earth ; and on poisonous airs and waters. In the first of these, he shews that the ancients were fully aware of the harmless nature of the poison of the most venomous reptile unless when mingled with the blood ; of which he adduces an instance from Lucan's *Pharsalia*, where Cato is introduced, when marching the remains of Pompey's army through Africa, wisely telling the soldiers, almost choaked with

thirst, yet afraid to drink of a spring to which they came, because full of serpents :

“ *Noxia serpentum est, admisto sanguine, pestis ;*

“ *Morsu virus habet, et fatum dente minatur :*

“ *Pocula morte carent.*”——

Luc. Phars. Lib. ix. vers. 614.

Speaking, in his fifth essay, of the poisonous effects of laurel water, (water distilled from the leaves of the *Prunus Lauro-Cerasus*, or cherry laurel,) which are now known to result from the Prussic acid which gives it its peculiar flavour, he points out the efficacy of ammonia in counteracting them, detailing an experiment upon a small dog, to which half an ounce of this water had been exhibited with the usual results, but, when he seemed on the point of expiring, a phial of good spirit of sal ammoniac was held to his nostrils, and a small quantity forced down his throat—the effect of which was, his gradually recovering the use of his limbs, and, in about two hours, running about with tolerable strength, and ultimately recovering completely.*

In 1703 Mead presented an analysis of Bonomo's letter to Redi, (on the subject of the cutaneous worms that generate the itch,) to the Royal Society, in whose Transactions it was inserted, and the doctor admitted a fellow of that learned body.

* More recently chlorine has been recommended as an infallible antidote to this formidable poison : but such is the rapidity with which Prussic acid destroys the functions of life, that in but few instances of its administration is there sufficient time left for attempts to counteract its deleterious effects.

Mead had taken his degree as doctor of physic, at the University of Padua, on the 4th of December 1707; was created doctor of medicine by diploma, at Oxford; and the high reputation he enjoyed will be best estimated by the deference paid to him by foreigners of eminence, who could have no motive for flattering him.—Mead was a strong advocate for the use of purgatives in lessening, if not preventing, the secondary fever, which so often proved fatal in the confluent small pox; and communicated his opinions upon the subject to Doctors Radcliffe and Freind; the latter of whom adopted them, and published Mead's letter on the subject, containing a number of cases illustrative of the efficacy of the practice, in his commentary on the first and third books of the Epidemics of Hippocrates.* Being applied to by order of the Lords of the Regency, at the time of the plague proving so fatal at Marseilles in 1719, to inquire into the best means of preventing its introduction into England, he published in the following year his treatise on the plague,† which was bought up with such avidity that no less than seven editions were printed in one year. But, to enumerate and point out the value of all the numerous publications with which this excellent man enlightened and gratified the world during his life, would in itself demand a volume, and we have already too far transgressed the limits

* Freind, *Opera Omnia medica*. Editio altera, Londinensi, multo correctior, 4to. Parisiis, 1735. P. 67.

† Mead's *Medical Works*, p. 172.

which ought to be assigned to individual writers. It must therefore be sufficient to observe that this worthy man, broken down by a gradual decay of nature, closed his useful labours on the 16th of February, 1754, at the age of sixty-one years.

In a treatise on midwifery,* published in 1705 by Pierre Amand, a successful practitioner of the obstetric art at Paris, (who was born at Riez, in Provence, about the year 1650,) we meet with several cases of extra-uterine impregnation, and the description of a net contrived by the author, and accompanied by a representation, for extracting the heads of foetuses, when left behind, after separation from the body: but this contrivance, although ingenious, is now wholly superseded by the crotchet.

About this time, Anthony Boccacini, a surgeon, practising at Comachio, a town in the duchy of Ferrara, revived the practice of Magnatus, which had fallen into disuse, and prohibited the application of all greasy or oily substances to ulcers or wounds, together with the use of tents and injections in the cure of abscesses,—which latter retarded the cure, not only by preventing the union of the parts, but also by their irritation, which frequently occasioned the lips of the wound to become callous. Boccacini published many works in defence and explanation of Magnatus' doctrines.

Precocity of talent, as indicative of a morbid ir-

* *Nouvelles observations sur la pratique des Accouchemens.* Paris, 1705.

ratibility of the sensorium, terminating but too frequently either in a premature death, or in a state bordering upon fatuity, worse even than the actual termination of existence, is rarely coveted by parents, and as rarely followed by that display of solid talent and durable excellence, which the early dawn of infant intellect appeared to promise. The organs of the understanding seem to require a certain maturity of developement to fit them for the more exalted operations of the soul, as the clay of the potter must have attained a proper degree of consistency, to enable it to receive and to retain the form which it is destined to attain upon the wheel. The exercise of the brain, like the exercise of every other organ of the human frame, is attended with, if not indeed productive of an increased determination of blood to the vessels of the part, which, when preternaturally increased by inordinate excitement during the tender period of infancy, too frequently induces inflammation, terminating in that dropsical effusion too well and too fatally known by the appellation of hydrocephalus, while a similar, but still more inordinate exercise of the thinking faculty in the adult, not unfrequently terminates in incurable insanity.

But as there is no rule without its exception, so do we find cases in which this premature developement, even when accompanied by the premature exercise of the reasoning faculties, has not been followed by any of those calamitous results which experience teaches us to apprehend, and the

precocious powers of reason have acquired strength in place of exhaustion by the growth of years.

Among these exceptions to the rules by which human intellect appears in ordinary cases to be governed, one of the most brilliant, as well as of the most exemplary, one which adorns the page of history, and sheds a holy lustre over the age in which he lived, is that of the illustrious Haller, son of an advocate of Berne, in Switzerland, where he was born on the 18th of October, 1709. The accounts on record of the early display of the powers of his infant mind partake more of the character of romance, than of the sober veracity of history, and would appear utterly incredible, were it not for the high and unquestionable authority upon which they rest. While yet an infant, under the age of five years, he was accustomed, as we are told, to commit to writing, with a view to imprint them more strongly upon his memory, all the new words which he chanced to hear in the course of the day : and he even composed, it is said, a variety of rules in grammar, arithmetic, and other sciences, for his own use ; an undertaking hardly credible, even at an age much farther advanced. Before he had passed the age of nine, he had not only prepared for his own use lexicons of the Greek and Hebrew, with a grammar of the Chaldaic, but even compiled a biographical and historical dictionary, containing above two thousand lives of distinguished personages, from the works of Bayle and Moreri. Even in infancy he exhibited that talent for satire, which,

in after life, unhappily created for him so many enemies. When only ten years old, he wrote a satire in latin verse against his tutor, a harsh and ridiculous pedant. His father dying while he was yet only thirteen yearsold, and he being thus left to his free choice in the selection of a profession, he chose the department of Medicine instead of the Church, for which he had been designed by his father. Being sent to school for a short time to complete his preliminary education, he translated a theme, which he was desired to write in Latin, into Greek. He was removed from hence in 1723, to Bienne, where he studied philosophy under a physician of eminence, and learned the system of Descartes.* Here the romantic beauties of the situation awakened in his breast feelings

* Descartes professed a belief in Materialism, and, by way of illustrating his doctrines, constructed a wooden automaton, so ingeniously contrived as to appear all but animated. Descartes' object in the construction of this little machine was to demonstrate practically the absence of souls in beasts, which he regarded as mere machines impelled at pleasure by man. This figure, which represented a human female, gave rise to much malicious wit, at the expense of the philosopher, who was spoken of as having an illegitimate daughter named *Fran-chine*. Descartes having once embarked on board a Dutch vessel, accompanied by this little figure in a box, the captain, who understood navigation better than mechanics, and had as much curiosity and superstition as are generally found blended with the nautical character, hearing movements within the box for which his scanty meed of philosophy was unable to account, watched an opportunity to explore the hidden cause, and, terrified to find, on opening the wonderful box, that a human form of singular animation, yet apparently constructed only of wood, was its mysterious tenant, concluding it could be no other than the devil, concealed for no very benevolent purpose, in his vessel, he unceremoniously bundled poor Descartes' *wooden daughter* into the sea, and left the un-

of poetic enthusiasm, and produced a number of poems in German, the preludes of more finished compositions at a maturer age. About this period of his life he commenced a practice which he ever after continued, of reading with his pen in hand for the purpose of making extracts of whatever he met that was remarkable, and recording the impressions made at the time upon his own mind by the work which engaged his attention. It was at this period also that he finally determined upon adopting the medical profession : and, having come to this determination, he removed to Tubingen, where he studied anatomy, under Duvernoi and Camerarius, with great ardour, and acquired a taste for a better system of philosophy than the Cartesian. Moreover, being disgusted by a drunken debauch into which he had been led by his companions, he renounced wine for ever, and adopted a greater gravity of demeanour. In 1725, the reputation of the illustrious Boerhaave led him to Leyden, where, besides hearing the lectures of that distinguished master, he dissected with Albinus, and cultivated the acquaintance of Ruysch. Returning to Tubingen, he took as the subject of the inaugural thesis for his degree "*De ductu salivari Coschwiziano*," a subject which he afterwards resumed at Leyden in 1727. After visiting England, where he experienced much attention, he proceeded to Paris, where he dissected under Le

fortunate philosopher the consolation of unavailing regret for the destruction of that which had cost him years of contrivance.

Dran; but in consequence of a malicious information laid against him for having subjects in his room for dissection, he was obliged to make a precipitate retreat from that capital, whence he removed to Basil. Here, in addition to studying mathematics under Bernouilli, he acquired a taste for botany, which he had hitherto regarded with dislike. In this he was inspired, as he tells us himself, by the genius of the place which the Bauhins had consecrated by their presence, and which boasted of being the residence of Stahalin. Such was the ardour and enthusiasm of his disposition, and such the eagerness with which he embarked in this new pursuit, that he already, while a mere tyro in the science, and hardly able to distinguish plants of the most frequent occurrence, projected the execution of his great work on Swiss Botany, a work which he did not complete for many years after. He also made a number of botanical excursions among the Alps of the Valais, Savoy, and Berne, between this period and the year 1736, the fruits of which he gave to the world in subsequent publications. The magnificence of the scenery into which these excursions led him, revived his poetic ardour, and occasioned the composition of his celebrated "Poem on the Alps," followed by a number of minor productions, of such intrinsic and pre-eminent merit as to acquire for him the reputation of having been the first to give harmony, richness, and sublimity to the poetry of Germany. His poem on the Alps was composed at the early age of twenty-one; and, with his other poetic productions, went

through twenty-two successive editions in the original, besides numerous translations into other languages.

Having returned to Berne about 1730, Haller commenced publicly lecturing on anatomy; but, owing to the unavoidable impression produced by his former satires, although now destroyed, his success was far from being proportionate to his merits; and this, in addition to the constitutional irritability of his temper, prevented his adding much to the number of his friends. Having, however, acquired some celebrity abroad by the publication of various detached papers on anatomy and botany, he received an invitation in the year 1736, from George II, King of England, to undertake the professorship of Anatomy, Botany, and Surgery, in the recently founded University of Göttingen; an offer which, notwithstanding the unavoidable pang of separation from his native country and the connections of his wife, which its acceptance occasioned, he did not deem it prudent to reject. His arrival at Göttingen was farther embittered by the death of his wife, (to whom he had been most tenderly attached,) in consequence of an injury she received from the overturning of their carriage during the journey. To divert his mind from a fruitless indulgence in grief, he entered with ardour on the duties of his office, encouraging the more industrious of his pupils to devote themselves exclusively, with his assistance, to the investigation of some particular object of the animal œconomy, and to accompany their researches by careful experiments: a course of pro-

cedure of which he himself set the example, being earnestly bent on effecting that great reform in physiology, which his subsequent writings so triumphantly accomplished. Experiment, he was fully convinced, was alone capable of dispelling the accumulated errors of preceding centuries, and purging the science of physiology from the innumerable absurdities which obscured and disgraced it. While thus engaged in the improvement of medical knowledge, he secured the friendship of Baron de Munchhausen, the Hanoverian Prime Minister, who cordially seconded, and even anticipated his schemes for the benefit of the university; obtaining for it the establishment of a botanic garden, anatomical theatre, school for surgery and midwifery, lying-in-hospital, &c., &c. In 1738, soon after the death of his venerable preceptor Boerhaave, he undertook to publish his "*Prælectiones*," from a MS. copy of his own, collated with others; and in the same year he made an expedition into the Hercynian forest, of which he afterwards gave an account; as well as of a journey which he made in the following year into Switzerland.* In 1739 he commenced the publication of his commentaries on Boerhaave's lectures,† in seven volumes 8vo. the last of which appeared about the year 1744. The merit of this truly valuable work is too firmly established to need eulogy here. In 1742 was published the first edition of

* *Iter Helveticum, Anni 1739.*

† *Commentarii ad Hermannii Boerhaave prælectiones Academicas, &c. 7 vols. 8vo.—1739—1744.*

his great work on the Botany of Switzerland,* the plan of which he had projected many years before it made its appearance. In 1743 he commenced the publication of a series of Anatomical Plates,† amounting in all to thirty-six. These related chiefly to the blood vessels *in situ*, and were among the most valuable auxiliaries to the study of this branch of anatomical knowledge. The first edition of his excellent Manual of Physiology‡ appeared in 1747, and was eagerly sought after, passing rapidly through many editions, and translations. In this work he gave the outline of a system which he afterwards developed more fully in a larger publication. In 1749, he collected a number of his botanical papers,§ and published them in an 8vo. volume.

But to enumerate the whole of his numerous and valuable contributions would unavoidably transgress all reasonable limits, and it becomes impossible to do more than slightly notice a few of the more important:—such as his edition of Boerhaave's "Methodus Studii Medici," a work of vast labour and research, to which he made such copious additions, that by far the greater part was his own, and it may be regarded as the precursor of his celebrated and useful "Bibliothecæ."—After

* Enumeratio methodica Stirpium Helvetiæ indigenarum. Fol. 1742.

† Iconum anatomicarum, quibus præcipuæ partes corporis humani delineatæ continentur. Folio. 1743.

‡ Primæ Linæ Physiologiæ, in usum Prælectionum Academicarum. 8vo. 1747.

§ Opuscula Botanica. 8vo. 1749.

having filled the duties of a professor for seventeen years, at Göttingen, with equal honour to himself and advantage to the university, he returned in 1753 to Berne, where he was most favourably received, and rose rapidly to the highest honours of the state; but with his political career we have nothing to do. He had a few years before, while residing at Göttingen, been raised, by the Emperor Francis, and at the request of his royal patron George II, to the rank of nobility* by the title of Baron Von Haller. Two years after his return to his native town, he found time, amid the multitude of his public duties, to publish a valuable work on morbid anatomy.† — Several other works of great merit graced the succeeding years: and he soon after commenced the great work on Physiology,‡ of which his “First Lines” may be regarded as the Prodomus: this work, upon which his reputation chiefly rests, occupies eight quarto volumes, and exhibits such a vast collection of well authenticated facts, of which his own discoveries and observations form the most important as well as most conspicuous part, together with such accuracy of description, and such truly scientific and perspicuous reasoning, as have been seldom, if ever brought together upon any one subject. In 1768, he published a new and cor-

* A. D. 1749.

† *Opuscula Pathologica, quibus sectiones cadaverum morbosorum potissimum continentur*, 8vo. 1755.

‡ *Elementa Physiologiæ Corporis Humani*. 8 vols. 4to. Lausanne, 1757—1766.

rected edition of his great work on the Botany of Switzerland,* already spoken of, in which he introduced an arrangement peculiar to himself, and manifested a strong disinclination to adopt the improvements recently made by the immortal Linnæus. This work, one of the most copious published at that time, was singularly correct and minute in the specific distinctions, and œconomical and medicinal properties of plants. Besides these works, any one of which was sufficient to immortalize his name, he gave to the world his *Bibliothecæ*; of which he published no less than four,† containing a chronological list of every work of every age, country, and language, on the subject to which each *Bibliotheca* was devoted. These works display an astonishing extent of erudition, embracing not only all the known pertinent publications of every country, but multitudes which were probably unknown, even by name, to most of the students belonging to the countries which produced them. They afford a most valuable and comprehensive system of medical biography, and yield important aid to the medical historiographer.

Haller's merited celebrity procured him numerous testimonials of respect from every part of

* *Historia stirpium Helvetiæ indigenarum*, 3 vols. fol. cum tabulis æneis. 1768.

† *Bibliotheca Botanica*. 2 vols. 4to. 1771.—*Bibliotheca Chirurgica*, 2 vols. 4to. 1774.—*Bibliotheca Anatomica*, 2 vols. 4to. 1774.—*Bibliotheca Medicinæ practicæ*. 4 vols. 4to. 1776—1788, the two last being posthumous, published from papers which he left behind, with additions, by Doctors Tribolet and Brandis.

Europe, and among the rest he was requested by the King of England to accept the Chancellorship of the University of Göttingen. From earliest youth he had been distinguished by a fervent but rational piety, which sustained him under every affliction, and proved his best consolation in the hour of death. This took place in his seventieth year, in consequence of a disease of the bladder, the pain of which could only be alleviated by the free exhibition of opiates. Such, however, was the tranquillity with which he viewed the slow but certain approaches of dissolution, that he marked himself the progressive decay of his organs, and on the 12th of December, 1777, with his finger on his wrist, calmly observed to his physician, Mr. Roselet, "My friend, I am dying—the artery no longer beats," and expired immediately without a struggle.

It had long been known that the chief, if not the whole of the danger which attended the operation of extracting the venom from poisoned wounds, by means of suction with the lips, arose from the possibility of some wound, or other abrasion of the skin lining the lips and fauces, admitting of the absorption of the poisonous fluid into the system, and occasioning its admixture with the vital fluid. To afford relief, therefore, to patients labouring under such distressing circumstances, without in any manner compromising the safety of the operator, had long been a medical problem of difficult solution. In 1707, however, Dominic Anel, physician to the Court of Savoy, published

a treatise* expressly upon the solution of this problem: among the instruments employed by Anel, for the accomplishment of his benevolent design, was a syphon of fearful size; and altogether his whole apparatus appears to have been so cumbersome and so far from efficient, that it seems never to have come into general use. He also published in 1714 an improvement upon the plan of treatment of aneurism which had been proposed by Guillemau, a pupil of Ambrose Paré, who laid the tumour bare, passed a ligature under the artery above the seat of disease, and then, having emptied the sac, closed the wound. Upon this method Anel improved by making a longitudinal incision over the aneurism, without wounding it, after which he made a single ligature upon the vessel close above the tumour, and left the rest to nature. A tourniquet was in all these cases applied to the limb so as to secure a free command of the artery. Under this treatment the tumour gradually disappeared by absorption. This plan experienced considerable opposition on the part of the surgeons, most of whom objected to it, although not unfrequently followed by Heister and others. Heister, indeed,† expresses his doubt of its success in wounds of the large crural artery, so as to enable the limb to be saved: its perfect efficacy and safety, nevertheless have been fully demonstrated by more modern practitioners. Anel's

* *L'art de sucer les plaies, sans se servir de la bouche de l'homme*, 8vo. Turin, 1707.

† *Syst. Chirur.* par. ii. sec. 1. cap. 13. §. 22.

principal work, however, which yet retains its reputation, was that which explained his mode of treatment of *fistula lachrymalis*,* in which he describes a fine and flexible tube by means whereof he was able to open the lachrymal duct, wash it out with a syringe, and finally heal the passage. This excited, if possible, a warmer controversy than his plan of treating aneurisms; it met, however, the approbation of the College of Surgeons at Paris, and has formed the basis of all the modern improvements in the method of treating that complaint.

In 1715, three books of Medical Observations, by Jodocus Lommius,† a physician of Brussels, with a dedication by the author to the senators of that republic, were printed at Amsterdam. The work contains distinct accounts of almost every complaint to which the frame is subject, commencing with the *Ἐφήμερα* of the Greeks, (the symptoms of which he details minutely, but concisely,) and book ending in the first book with Syphilis: the first being devoted to such complaints as affect the whole system; the second book, commencing with head-ache, comprising those which affect particular organs; while a third is reserved for a consideration of the terminations and *sequelæ* of diseases, which he discriminates into various classes, according to their violence, duration, danger, and other particulars. A translation of these Observations, with a translation of Lommius'

* Nouvelle méthode de guérir les fistules lachrymales. 4to. Turin, 1713.

† Observationum Medicinalium Libri tres, 12mo. Amstelodami, 1715.

“Treatise on Continual Fevers” prefixed, was published in London, in 1732, by Dr. Thomas Dale, with a dedication to the author of the Pharmacologia, noticed in the last chapter. Both works contain some useful observations; and the style of Lommius’ original Latin is far from inelegant.

Laurence Heister, an eminent physician, surgeon and anatomist, (who was born at Frankfort on the Maine in 1683,) while professor of anatomy and surgery at Altdorf, in the little canton of Uri, published his “*Institutions of Surgery*” in German, from which it was soon translated into Latin, and most of the modern languages of Europe; and added much to the celebrity of its author. He also published some works on the theory and practice of Medicine, founded on the mechanical doctrines of the Boerhaavian school, and he likewise wrote a valuable practical work in quarto, consisting of medical, surgical, and anatomical observations, still held in high esteem.

In 1719 John Allen a physician practising in London, published the first edition in Latin of his “*Synopsis universæ medicæ practicæ*,” 8vo. dedicated to the president and fellows of the college of physicians, which was received with such avidity, both abroad and at home, that it went rapidly through a multitude of editions, and was enlarged by its author to nearly double its original bulk. It contains short accounts of all the affections of the human frame, collected from the most distinguished writers, antient and modern. He speaks of this work himself with the greatest modesty, and desires his reader not to content him-

self with the extracts he has given, “ *sed potius*
 “ *authores ipsos ubicunque consulat: nam, in*
 “ *transferendis eorum sententiis, verisimile est me*
 “ *frequenter errasse, aut saltem sensum obscure*
 “ *aut imperfecte tradidisse. Dulcius ex ipso fonte*
 “ *bibuntur aquæ.*” After it had been translated
 into French, he gave an English translation in 2
 vols. 8vo. in 1734: of which a fourth edition, also
 in two volumes, was published in London in 1761.

In the same year in which Allen published the
 first edition of his Synopsis, William Oliver, a
 physician practising at Bath, published a small
 work* on the medicinal properties of the waters
 of that place, to which he has subjoined a most
 surprising account† of a labourer of the name
 of Samuel Chilton, who resided at the village of
 Timsbury, near Radstock, about twenty-five years
 of age, and a robust habit of body, but not fat,
 who, without any known cause, was seized, on the
 13th of May 1694, with a most profound sleep,
 which lasted for a month without interruption, and
 out of which nothing could rouse him, although it
 appears he wakened at times sufficiently to eat the
 provision which his mother providently placed
 within his reach. His next sleep commenced
 about the 9th of April 1696, and lasted for seven-
 teen weeks, during which he was visited by Mr.
 Gibbs, a very able apothecary of Bath, who bled,
 blistered, cupped, scarified, and tried every other

* A dissertation on the Bath waters. 12mo. Lond. 1719.

† A relation of an extraordinary sleepy person at Timsbury
 near Bath. 12mo. Lond. 1719.

method of rousing him, in vain. After the first fortnight he never was observed to open his eyes. Provisions stood by him, as before, but he was never seen either to eat or to evacuate, though he evidently did both regularly, till the expiration of the first ten weeks, after which he was no longer able to eat, his jaws appearing clenched and his teeth set so close that they were unable to open them for the purpose of introducing food or medicine. At last they succeeded in getting a quill into an opening in his teeth, through which they poured some Tent wine occasionally down his throat ; and this was the only sustenance he took for six weeks and four days, during which he had but one evacuation of the bladder, and none by stool. At length, on the 7th of August, he awoke, dressed as usual, and walked about, unconscious of the length of time which had elapsed during his repose. On the 17th of August in the following year he fell asleep again for a third time, and continued to sleep without interruption till the 19th of November, when he awoke, asked for food, but, before it could be brought, fell asleep again, and continued in this state, but not quite so profoundly as before, till the end of January ; making a total period of one hundred and seventy-seven days, or six months one week and two days, consumed in sleep. During the first part of this last sleep he was visited by Dr. Oliver, the writer of the narrative, Mr. Woolmer, an experienced apothecary, and a number of others whom the novelty of the circumstance attracted to the place. The Doctor states that he found him asleep with a cup of beer, and a piece of

bread and cheese within his reach : his heart and pulse beat with regularity, and his breathing was free ; he was in a gentle perspiration, but the doctor thought his pulse, though regular, stronger than was perfectly natural. Doctor Oliver tried every expedient to rouse him, but in vain. At length, resolved to discover the cheat, if any really existed, he held a bottle of the most pungent spirit of sal ammoniac to his nose, and even threw some of it up into the nostrils, and forced a quantity of white hellibore powder up the same nostril, but all to no purpose. Some gentlemen who visited him in consequence of Doctor Oliver's report, found him in the same condition, only severely blistered from the roughness of the experiments tried upon him, which his mother naturally objected to having repeated. But, about ten days after this, Mr. Woolmer visiting him, and finding his pulse high, took fourteen ounces of blood from his arm, and left him still undisturbed by all the preparations for this operation. Doctor Oliver himself saw him again in September, but removed to another house about a furlong from that in which he had seen him before, and to which he had been transferred without once awaking, although in carrying him down a narrow staircase his head was accidentally struck against a large stone with great severity. Doctor Oliver's account closes with this last sleep, which continued, as has been already said, with only a momentary intermission on the 19th of November, till the end of January or beginning of February—without informing us of the conclusion of the case, or whether,

between February 1698 and the date of the publication of the account, a period of twenty-one years, he had had any relapses of his sleepy paroxysms. Doctor Oliver, besides the reason he had already had for believing there was no cheat in this matter, as in Anne More's fasting, states, that his sleeping, so far from being a source of gain, was a positive loss to his mother, from the interruption of his earnings as a labourer, while no counterbalancing advantage was derived from visitors who had free admission to his bed side, nobody remaining with him by day in the house, to receive any contributions which might be made. Such are the leading facts of this singular case, upon which Doctor Oliver comments according to the prevailing theories of the day: but as one fact is of more value than a thousand conjectures, we may be spared adding to the prolixity of this account by introducing the reasoning subjoined to the original.

During the dreadful plague which depopulated the town and vicinity of Marseilles in the year 1729, Francis Chicoyneau, a native of Montpellier (where he was born in 1672 and took the degree of doctor in 1693,) having acquired considerable celebrity both as a medical teacher and practitioner, was appointed one of the medical commission sent to endeavour to arrest the progress of that dreadful pestilence, on the recommendation of M. Enirac, who was first physician to the Regent.

Chicoyneau's zeal, attention, and success upon this occasion, gave such satisfaction both to the inhabitants and the Regent, that, on his return to

Montpellier, he was rewarded with a pension. In the following year, in conjunction with M.M. Verney Deidier, his colleagues in the commission, he published his remarks on this pestilence,* in which he contends for its nature not being contagious; and states, in corroboration, that he and his colleagues, acting upon this conviction, entered the chambers of the sick without fear, and without suffering from infection, whence they were led to conclude that it was not contagious;—an opinion which appears to have been productive of much mischief to the inhabitants, by leading them to neglect the proper precautions, and thus contributing to the diffusion of the evil. Being afterwards ordered by the king to collect the opinions of different physicians on the subject of the plague and, in particular, all the facts and observations which had been made on that at Marseilles, he prepared and published a quarto volume† containing the result of his inquiries, drawn up with great candour, and highly valuable from the collection of facts which it contained. Chicoyneau succeeded his father-in-law, Chirac, on the death of the latter in 1731, as first physician to the King, and was also made counsellor of state, and honorary member of the

* Observations et réflexions touchant la nature, les événemens, et le traitement de la peste de Marseilles, 12mo. 1721.

† Traité des causes, des accidens, et de la cure de la peste, avec un Recueil des observations, et un détail circonstancié des précautions qu'on a prises pour subvenir aux besoins des peuples affligés de cette maladie, ou pour la prévenir dans les lieux qui en sont menacés, 4to. Paris, 1744.

Academy of Sciences. He died in 1752, at the age of eighty years.

George Cheyne, a native of Scotland, where he was born in 1670, published, in 1722, the first edition of his *Essay on Gout*,* originally designed, as he himself informs us, both in the title and advertisement to the seventh edition, which followed within three years after the first, for the private use of a gentleman of the name of Tennison, and merely an abstract of a larger work which he had not leisure to complete. The theory of gout in this work is founded entirely upon that mechanical hypothesis which was the fashionable doctrine of the day; and he explains the reason of some persons being martyrs to this dreadful disorder, while others, with constitutions apparently similar in every respect, are exempt—upon the gratuitous supposition of a difference in the capacity of the vessels. He strongly advocates the use of the Bath waters, from which he had himself derived great benefit, both in this and other chronic disorders.—In 1724 he published his "*Essay on Health*," &c., dedicated to Sir Joseph Jekyl, Master of the Rolls, who had been a patient of his. In the preface he gives a kind of *catalogue raisonné* of his former works, which he criticises with equal freedom and severity; and is particularly severe upon himself in all cases in which he had treated others with levity or disrespect. In this work, (which appears to have suggested a

* An Essay of the true nature and due method of treating gout. The seventh edition, 8vo. Lond. 1725.

similar one by an eminent Scotch baronet in our own days,) he points out the necessity of the strictest attention both to diet and regimen for the preservation or restoration of health. (Of the efficacy of the plan which he recommended, his own case furnished a most striking and satisfactory illustration; for, having been naturally a voluptuary, and indulging his propensity to luxurious living, his corpulence had increased to such a degree that, by the time he had reached the meridian of life, he found himself so unwieldy and lethargic, and embarrassed by such difficulty of breathing, that he became alarmed, and determined upon adopting a total change of life, confining himself to a milk and vegetable diet, with a total abstinence from fermented liquors; by a rigid adherence to which plan, he soon found himself relieved from the most distressing symptoms under which he laboured, and was so strongly impressed with the beneficial effects of the method he pursued, that he was induced to make it public for the advantage of others similarly circumstanced.—In 1724 appeared a fourth edition of his work on Fevers,* with an Essay on the Improvements of the Theory of Medicine—the whole founded, like his Essay on Gout, upon the mechanical doctrines of the day. But the work by which, perhaps, his name is best known, is his “English Malady,”† which first appeared in 1733,

* A new theory of acute and slow continued fevers, 8vo. The fourth edition. Lond. 1724.

† The English malady, or treatise of nervous diseases of all kinds, 8vo. The fourth edition. Lond. 1734.

and acquired so much popularity as to reach to a fourth edition in the following year : subjoined to it are the cases of Dr. Cranstoun and the author himself, the latter at a considerable length, occupying no less than forty-six pages. Both these cases are eminently instructive, the latter especially, as it strikingly illustrates the efficacy of the plan, by which not only the effects of early indulgence, but also of hereditary predisposition were fully counteracted, and holds out a valuable lesson and most encouraging hopes to those who have suffered from intemperance. Yet, with all the practical evidence in favour of his own plan, Cheyne, with all that inconsistency which forms so much of our nature, relapsed into his old habits ; but had yet resolution enough, on finding his old complaints returning, to resume his system, and thus prolonged his life to seventy-two years, when he died, at Bath, in 1742.

Amongst the most distinguished and favourite pupils of the illustrious Boerhaave, we find the name of Gerard Van Swieten, the descendant of an ancient and respectable family in the Low Countries, who, after a preliminary course of philosophy at Louvain, where he preeminently distinguished himself by his industry and talents, removed to Leyden, where he studied Medicine under the great Boerhaave, and after an application of seven years took his degree of Doctor of Medicine, in 1725. Having previously attained a distinguished rank among men of science, he was almost immediately appointed to a medical professorship, which he held with distinguished re-

putation and ability for many years : his lectures, no less than those of his colleague and instructor Boerhaave, attracting an immense concourse of pupils from every part of the world. His eminent success and growing popularity at length roused the envy and excited the malice of those who felt mortified by the consciousness of their own comparative inferiority, and wished for the removal of the greater luminary in the hope of adding an imaginary brilliancy to their own borrowed light. These persons using zeal for religion, as is but too often the case, to mask their interested and dishonourable views, and forgetting, or pretending to forget, that the tenets of religious faith had no connection with the doctrines of medicine, or that the aphorisms of Hippocrates flowed with equal purity from the lips of a Mahometan, a papist, or a protestant,—availed themselves of an obsolete and almost forgotten provision of the laws of Holland, prohibiting those who professed a faith differing from the established religion of the state from holding any public appointment. Van Swieten was, in consequence, obliged to resign a professorship, which he had held with equal honour to himself and advantage to the university ; and employed his leisure in writing commentaries on Boerhaave's Aphorisms,* the first volume of which had appeared, and the second was nearly ready, when his reputation procured him an invitation from the court of Vienna. This he accepted, and re-

* *Commentaria in Hermannii Boerhaavii Aphorismos de cognoscendis, et curandis morbis*, 5 vols. 4to.

moved thither in 1745, after stipulating for permission to follow his usual course of life. His unwearied zeal, rigid love of order, perfect knowledge of ancient and modern languages, general erudition, intimate acquaintance with Medicine and all its collateral sciences, added to his love of justice and decorum, peculiarly fitted him for taking the lead in the medical school of Vienna. There his first labour was the reformation of the course of study ; for which purpose he accepted a professor's chair, and displayed great firmness and zeal in eradicating abuses, and laying the foundation of that flourishing school for which Vienna has been since distinguished. Through his influence with the Empress, the collège was rebuilt, with the addition of a chemical laboratory, schools of anatomy and surgery, a clinical establishment at one of the hospitals, and the foundation of a botanic garden. Being appointed librarian to the imperial collection, he introduced a liberal and highly important improvement, in permitting visitors to make notes and extracts from its contents. His hostility to innovation made him an opponent to the practice of inoculation. He now published a work on the Diseases of Armies,* which possesses considerable merit. But it is his Commentaries on the Aphorisms of Boerhaave which will hand his name down to posterity : they form a vast magazine of medical practice and pathological research, the result of his own ex-

* Description abrégée des maladies qui règnent communément dans les armées, avec la méthode de les traiter : 8vo. Vienna, 1759.

tensive reading and experience, which, amid all the fluctuations of medical science, still and ever must maintain its value from its vast accumulation of medical facts, well selected and judiciously arranged, as well as for the valuable summary it exhibits of the knowledge of the best writers, both of the ancients and of his own time. Among other observations, he remarks, that people, who, by a vicissitude of fortune, have been reduced from affluence to the necessity of earning their bread by bodily labour, and exchanging a luxurious table and indolent life for spare diet and active exertion, have become permanently cured of gout; and gives, in illustration of this, the case of a rich priest, who had enjoyed a fat living and long been a martyr to gout, but, chancing to be carried into slavery by a Barbary corsair, and kept for two years to hard labour and spare diet in the galleys, lost his gout and his obesity together, and after having been ransomed, enjoyed, by perseverance in his abstemious habits, health, and exemption from gout for many years. This work has been translated into English and most European languages. Van Swieten, besides being raised to the dignity of a baron of the empire, was elected a member of almost every learned society in Europe. At length, after enjoying unbroken health for a long succession of years, his constitution began to fail, and, after a progressive decline for three years, he was attacked with gangrene in one of his toes, which proved fatal in the 73rd year of his age, at Schoenbrunn, in the year 1772; after he had during his useful life

essentially contributed to benefit medical science, generally, throughout Germany.

In the year 1725, John Freind, a physician of great eminence and extensive erudition, whose name has already been more than once noticed in these pages, published the first volume of his *History of Physic*,* addressed to the celebrated Dr. Mead. A second volume of the work appeared in the following year. In the first of these volumes he treats of those Greek writers who flourished since the days of Galen, fixing with precision the æra in which Oribasius, Ætius, Alexander and Paulus flourished, which former historians, even those of the best repute, had left confused and unsatisfactory. He has also preserved many valuable fragments of authors who wrote before the days of Galen; pointed out various improvements in surgery; and allotted to the ancients many facts and discoveries falsely claimed by the moderns, such as the knowledge of the salivary glands, the use of the seton, method of making issues by means of caustic, and tapping in dropsy. He also dwells upon those uncommon complaints which have been noticed by the ancients, as the Guinea worm, and lycanthropia. He commends methods of cure adopted by the ancients, which had either fallen into disuse, or were rarely employed—as scarification, and arteriotomy; speaks of the use of purgatives in fevers, &c.—of bleeding in exanthemata and syncope, and of the conjoint

* The history of physic, from the time of Galen to the beginning of the sixteenth century, 2 vols. 8vo. Lond. 1725-6.

use of purging and bleeding in palpitation of the heart : and makes many useful and curious observations on aneurism, inguinal and crural hernia, the discovery of the circulation, and other matters equally interesting and important. In the second volume he shows the origin and progress of literature among the Arabians, and the zeal and munificence of the Caliphs in promoting improvement ; determines the æras of the Arabian physicians, both those whose works have reached us, and those whose names had not been heard of before ; and shows the portion of improvement which Medicine owes to each ; treats of complaints either known to the Arabian writers alone, or first mentioned by them, as, for example, the small pox, which was utterly unknown to the Greek writers ; points out the improvements made by them in practice, in the substitution of milder purgatives for those in use before ; and traces the origin of chemistry to them, and the introduction of preparations yet retained in our pharmacopœas. Quitting the Arabs, he descends to the later ages, to the revival of Medicine in Europe, and to the schools of Salerno, Naples, Montpellier, and Bologna, founded for its encouragement. The introduction of chemistry he ascribes chiefly to our countryman the illustrious Bacon, whose various discoveries likewise in optics, catoptrics, dioptrics, mathematics, astronomy, and natural philosophy, he briefly notices. He gives an account of the pestilence which raged so extensively in the year 1348 ; and describes the novel disorders that appeared in the following century, as the sweating sickness, which made its first

appearance in 1483 ; the scurvy, which attacked the Portuguese circumnavigators ; and syphilis, which was the price paid by Europe for the discovery of America. Such are the leading features of this work, which is at once curious and instructive. It was translated into Latin by Doctor John Wigan, and forms part of the edition of his works published at Paris in 1735,* from which a considerable portion of the more valuable materials of the present history, during those periods which are common to both, has been derived. The chief defect in Freind's work is an inattention to the regular observance of chronological order, which is often a source of perplexity.

Freind was born in 1675 at Croughton a town of Northampton, (of which his father was rector,) and received his education at Christ Church, Oxford, at the time that the celebrated Doctor Aldrich was dean ; and, having taken his master's degree on the 12th of April 1701, and that of bachelor of medicine on the 1st of June 1703, he was admitted to his doctor's degree by diploma, on the 12th of July 1707. As early as 1703 he gave proofs of the precocity of his genius, in the publication of his *Emmenologia*, founded in a great degree upon the mechanical doctrines of the day. In the following year he was appointed lecturer in chemistry in the university—and in 1705, he accompanied the Earl of Peterborough, as physician to the forces, into Spain,

* *Johannis Freind MD., Serenissimæ Reginae Carolinæ Archiatri, Opera Omnia Medica. Editio altera, Londinensi multo correctior et accuratior, 4to. Parisiis, 1735.*

where he continued with much reputation for two years, and, on his return, drew up a narrative of the transactions there. In 1709 he published his Lectures on Chemistry, in which he accounted for almost all the phenomena of the science upon the principles of the Newtonian philosophy. In 1712 he was chosen a fellow of the Royal Society; an honour which he had richly earned by his services to science. In the same year he accompanied the Duke of Ormond to Flanders, whence he returned within a year, bringing back copious additions to his stores of knowledge. In 1716 he published the first and third books of the Epidemics of Hippocrates, accompanied by nine commentaries on fevers. In 1719 he published a letter to Doctor Mead on the use of purgatives in the secondary fever of confluent small pox, wherein he treats the subject with his usual skill and perspicuity. In 1720 he delivered the Harveyan Oration—and in the year 1723, while a prisoner in the Tower, wrote a letter to Doctor Mead on the subject of certain kinds of small pox, in the postscript to which he says—"Ego scribo hoc, cum permissione atque etiam *indulgentia* Præfecti, *in præsentia* Warderi: qui cum in scribendo me non multum adjuvet, facit quod tibi gratum fore reor, ne longior sim." It was during this imprisonment that he commenced the History of Medicine, already spoken of. He died at the age of fifty-two years in 1728, and was interred at Hitcham in Buckinghamshire.

Dr. James Douglas, one the most distinguished teachers of anatomy in his time, and the im-

mediate predecessor of the celebrated Dr. John Hunter, published in 1726 "*A history of the lateral operation for the stone*," in octavo, of which he gave a second edition in 1733, accompanied by an appendix, exhibiting a comparative view of the method of operating employed by different lithotomists, and more especially that recommended by Cheselden. His brother John also, who was surgeon to the Westminster infirmary, and author of several controversial works, wrote an account of the high operation for the stone, which he practiced.

In the same year Dr. Edward Barry, a native of Dublin, who had studied and taken his doctor's degree at Leyden in 1719, published a treatise on consumption* of the lungs, in the preface to which he takes a concise review of the progress of Medicine from the time of Hippocrates to that of Harvey, and demonstrates the small improvement that was really made in all that time. He gives particular credit to Aretæus, for having first digested into a more lucid order the confused materials furnished by Hippocrates, and points out the service performed by Galen in collecting the scattered diagnostics and prognostics dispersed through the writings of former physicians; but censures him at the same time for his intro-

* A treatise on consumption of the lungs, with a previous account of nutrition, and of the structure and use of the lungs. 8vo. Dublin, 1726. A reprint appeared in London in the following year, and in 1759 he published a fourth edition greatly enlarged and improved, under the title of "*A treatise on the three digestions and discharges of the human body, and the diseases of their principal organs*."

ducing the peripatetic philosophy into the theory of disease, and thus not only retarding the improvement of physic, but involving it in fictions and erroneus hypotheses. From the time of Galen to that of Paracelsus, writers did little more than transcribe Galen and Aristotle, taking hardly the least notice of Hippocrates till Hollerius and Dinetus revived his doctrines in France. Paracelsus, however, violently overturned the Galenic doctrines, and substituted the chemical in their room, explaining, or endeavouring to explain, all the operations of the animal frame, upon the theory of fermentations. The discovery of the circulation produced a fresh revolution in Medical science, and introduced those mechanic, hydrostatic, and hydraulic principles which prevailed at the period when our author wrote.

About this time the use of cold water began to come into vogue, and a work in favour of this practice was published by Dr. Hancocke, under the title of "*Febrifugum Magnum*;" besides which in 1726 an anonymous pamphlet of nearly three hundred pages* appeared, recommending an extension of Dr. Hancocke's plan to other complaints, as, *phrenitis, melancholy, apoplexy, palsy, catarrh, &c. &c.* In *phrenitis* the author recommends confining the patient to cold water almost entirely for his drink, washing the head frequently

* *Febrifugum Magnum Morbifugum Magnum*: or the grand febrifuge improved. Being an essay to make it probable that common water is good for many distempers that are not mentioned in Dr. Hancocke's *Febrifugum Magnum*. 8vo. Lond. 1726.

with cold water, and using the cold bath freely. He recommends a trial of the diaphoretic properties of cold water ; advising, for this purpose, that, after the use of the cold bath, the patient should be made to take a good draught of cold water, and be immediately put to bed and warmly covered up. The reason he assigns for giving cold water immediately on coming out of the cold bath, is “ because we find all people after bathing, as soon as they put on their clothes, are inclined to a breathing sweat.”* He does not, like the more scientific Currie, lay down any precise rules for the use of his great febrifuge, which he appears to have employed in a perfectly empirical manner, without having any clear notions of the rationale of its operation, which would have made him more exact in his directions as to the fit time and manner of its exhibition. With respect to phrenitis, instead of regarding it simply as an inflammatory affection of the brain, he loses himself in a wilderness of theories, and cites the opinion of writers, and of Bellini among the rest, to shew that it is the result of heat, which, by rarifying the blood, makes it occupy more room in the vessels, and thus produce difficult and irregular circulation, especially in the minuter arteries of the brain. He therefore recommends cold water both externally and internally with a view to the reduction of this morbid heat, and the production of such a reaction of the system, as, by determining the action of the fluids from the centre to the surface, might excite a sa-

* Page 12.

lutary diaphoresis; but he does not seem aware that diaphoresis is in itself a refrigerating process, which the exhibition of cold in any shape, after its commencement, is liable to urge on with a dangerous rapidity, and thus produce the most alarming and distressing symptoms. The internal use of cold water in ardent fevers had been recommended, among the ancients, by Hippocrates, Galen, and Celsus, and among the moderns by Cardan, Hoffman* and others. In the eighteenth century, about the same time when Smith and Hancocke wrote in favour of it in this country, recommending it almost as a universal remedy, the practice was even more general, and obtained a higher reputation in Spain and Italy, appearing, under the denomination of the "*Diæta Aquea*," to have superseded at one time all other diet as well as medicine. An account of this may be found in the Philosophical Transactions† communicated by Dr. Cyrillus, a professor at Naples; who, besides the internal use of cold water, speaks of the advantage of an external application of cold to the bodies of the sick, under the form of powdered ice or snow.‡ The Boerhaavian doctrine of *lentor* (sluggishness)

* Hoffmanni Opera, vol. 1. p. 479

† Vol. 36.

‡ Riverius says that washing the feet in water is beneficial in phrenzy, especially if the patient be frequently dipped in cold water. He also tells us that a linen cloth slightly wrung out of cold-water, and applied to the forehead, induces sleep—this practice however serviceable in cases of inebriety, and others in which there is great morbid heat, cannot be otherwise than injurious when indiscriminately adopted. Baglivi recommends cold bathing as a remedy for insanity: in which

in the blood being the cause of fever, and requiring, (as was imagined by those who regarded theory more than observation, and hypothesis more than facts,) the use of warm drinks and warm applications, prevailed, however, over the voice of nature, and the precepts of Hippocrates, of Hoffman, and Cyrillus,—and even the illustrious Cullen himself, whose sound judgment enabled him to detect and expose so many of the existing fallacies of his day,—even Cullen appears to have retained so much of the Boerhaavian feeling, as to have hesitated about the propriety of cold drink, or the admission of cold air in the burning stage of fevers. In fact the rationale of the action of cold in such cases was little understood; its application was too empirical, and too little guided by any scientific rules to ensure uniform success; and the unfortunate results which occasionally followed its injudicious application, concurred with pre-existing prejudices, which are not even at the present day wholly subdued, to prevent the general adoption of this salutary practice. Conducted, however, according to the excellent rules laid down by the inimitable Currie, the cold practice, whether by the internal use of cold drinks, or the external application of cold air, or cold water, in the form whether of affusion, immersion, or even simple ablution, will be found not only salutary but agreeable—not only free from the slightest danger, but attended with the most de-

he agrees with Van Helmont and others; and Sir John Floyer mentions, upon the authority of Doctor Tyson, its efficacy in the cure of nymphomania.

cided advantages ; and even capable of being safely combined in the fever of the West Indies with the use of mercurials,* as the writer of the present work has experimentally and satisfactorily ascertained. The chief circumstances demanding attention are, to employ it early in the complaint, while the vigor of the constitution and the powers of reaction are yet unbroken ; to use it at the moment when the febrile heat is greatest and the skin perfectly dry ; to discontinue it the instant the pulse begins to sink, or the slightest particle of perspiration to moisten the surface ; and not to employ it in conjunction with mercurials after the symptoms of constitutional affection by the mercury have appeared. Those who are desirous of fully understanding the principles upon which the practice of cold bathing, whether

* A striking instance of the utility of cold affusion as a means of reducing febrile heat, and enabling mercury to exert its specific action, occurred about the year 1817, at New Orleans, in the case of a young lady to whom mercury had been exhibited in vain to an enormous extent in a violent attack of yellow fever which threatened a fatal termination—the black vomit, and all the other indications of approaching death having appeared. The case being desperate, a trial of cold affusion was made, with the happiest results, although not under those circumstances in which prudence would have dictated it : a copious salivation came on during the administration of the cold affusion, and the patient gradually though slowly recovered ; her system having been overcharged with mercury before the force of the febrile action was subdued. Had this practice been adopted at an earlier stage, and followed with *equal boldness* while the heat of the body continued steadily above the standard of health, and the skin remained parched and dry, there can be little doubt that an infinitely smaller proportion of mercury would have been sufficient, and the evils which resulted from overcharging the system with it, would have been wholly avoided.

in sickness or in health, should be conducted, cannot consult a surer guide than the admirable work of the elegant and philosophic Currie;* a work which, whether viewed with regard to the classical purity of its style, (which sheds a splendour all its own over a subject barren and uninteresting in its nature to the general reader), or with regard to the philosophic manner in which the question is examined, and the sound pathological principles upon which the practice is founded—may be pronounced, in the figurative language of Haller, an *opus vere aureum*, which no medical practitioner ought to be without, and which all heads of families will find it their interest to keep as a book of occasional reference. An opportunity of farther illustrating the good effects of cold water in fevers will again occur when we come to the history of the fatal epidemic which prevailed at Breslaw in Silesia in 1737, and of which an account has been preserved by J. G. de Haen who himself experienced its malignity.

We now arrive at a controversy which was maintained with considerable asperity between two practitioners of some celebrity at this period, on a subject which even at this moment can hardly be considered as finally settled, since much difference of opinion respecting it may yet be found, both among practitioners and the public generally. Early in the eighteenth century a treatise on

* Medical Reports on the effects of water cold and warm as a remedy in fever and other diseases, 2 vols. 8vo. Fourth edition, London, 1805. A later edition has been since published by the author's son.

diseases of the skin had been published by Doctor Samuel Turner, the twelfth chapter of which contained a long and laboured dissertation on those congenital marks impressed upon the human body, as was believed, by the force of maternal imagination acting, during the period of gestation, upon the unborn fœtus. In order to expose the fallacy of Turner's doctrine, and shew the popular notion respecting these moles and blemishes to be founded in error, and repugnant to reason, Doctor James Augustus Blondel anonymously published a work* in which he demonstrated the absurdity of the doctrine, and its untenableness upon anything like scientific principles. Notwithstanding Blondel's withholding his name, Turner discovered him to be the author, and, regarding the publication as a direct attack upon himself and the doctrine contained in his book, felt called upon to defend what he had advanced, which he accordingly did in an appendix to his treatise on gleet in 1728, in which he brought forward additional facts. To this Blondel replied in 1729, in a work† in which he humourously exposed anew the fallacy of Doctor Turner's and the popular opinion. This occasioned the publication of a more seri-

* The strength of imagination in pregnant women examined, and the opinion that marks and deformities in children arise from thence demonstrated to be a vulgar error. London, 1727.

† The power of the mother's imagination over the fœtus examined, in answer to Mr. Daniel Turner's book, entitled "A defence of the twelfth chapter of his treatise *De Morbis cutaneis*," Lond. 1729.

ous reply* from Turner, who still maintained his original opinion, and supported it by farther cases adduced from Skenkius, Hildanus, Horstius, and other retailers of prodigies ; notwithstanding which, the good sense and sound reasoning of his antagonist prevailed, and the absurd doctrine of the mysterious power of the maternal mind became at length confined chiefly to superannuated practitioners, and superstitious nurses ; although the fourth edition of Doctor Turner's work, with a fierce-looking portrait of the author, appeared in 1731, still retaining the twelfth chapter without alteration.

In 1727 a small work,† designed as a kind of domestic Medicine was published in Paris by Peter Desault, a native and graduate of Bourdeaux, who was author likewise of a work on gout and syphilis, which last he professed to cure without salivation. Desault's practice excited some opposition, which called forth a vindication in a work‡ which he published in 1736 on the subject of calculus, wherein he strongly objects to the operation of lithotomy, which he regarded as perfectly unnecessary, since the stone admitted of solution, without the aid of cutting, by drinking the waters of Bareges, and injecting them into the bladder. These waters had acquired a high reputation for their supposed lithontriptic

* The force of the mother's imagination upon the fœtus in utero, still farther considered ; in the way of a reply to Dr. Blondel's late book &c. Lond. 1730.

† Nouvelles découvertes concernant la santé, et les maladies les plus fréquentes. Desault: 12mo. Paris. 1727.

‡ Dissertation sur la Pierre des reins et de la vessie, 3 vols. 12mo. Paris 1736.

powers; and were believed to be as potent in relieving the pain, and dissolving calculi in the kidneys, ureters, or bladder, as Mrs. Stephen's celebrated remedy lime water, or Castile soap, both of which came into vogue about the same time; they are still employed to alleviate pain, though no longer regarded as possessing lithontriptic powers. In the second volume of this work, Desault treats of hydrophobia, and expresses his belief that this formidable malady admitted of cure by mercurial friction: experience however has not served to corroborate this opinion. As to the vulgar notion of hydrophobic patients biting their attendants, and barking like dogs, he treats it with the contempt and ridicule it deserves.

John Douglas, of whom mention has already been made when speaking of his brother's History of Lithotomy, published in 1729 a work* in which he strongly recommends the use of bark in arresting the progress of gangrene; a practice which is still successfully pursued: he also published in 1736 some account of midwifery,† in which he unmercifully criticises the works of Chamberlen and Chapman; and in another publication he decries the obstetric forceps recently invented by Smellie.

James Denys, a celebrated accoucheur and lithotomist, published in 1731 a work on this latter subject which contains many valuable observations, on the symptoms by which the presence of stone in the bladder may be discovered with cer-

* An account of Mortifications, and of the surprising effects of bark in putting a stop to their progress. Lond. 1729.

† A short account of the state of midwifery in London.

tainty, accompanied by a description of a great variety of calculi, of which he appears to have possessed a large collection; calculus being as frequent in Holland, as it is rare in Bavaria. He mentions having taken from the bladder of a subject, a large stone with several branches, which had given the patient no uneasiness in his life time: and he also speaks of another which he cut out of the knee of a patient. His treatise on midwifery, one of the best extant, was published in 1733, but, being written in Dutch and untranslated, is less known than it deserves. Denys was physician and accoucheur to the college for improving the practice of man-midwifery, founded at Leyden in 1719: and he had been the pupil and coadjutor of Mr. Rau the lithotomist, whom he eventually succeeded in practice.

It has already been observed, when speaking of the obstetric forceps originally invented by the Chamberlens during the seventeenth century, that a veil of mystery was purposely thrown over it by its contrivers, who only revealed its nature or its use to those who were content to purchase the knowledge at an extravagant charge. In 1732, however, the secret was first partially revealed by Mr. Butter, who published an account of its construction and use in the third volume of *Medical Essays*; and more fully by Edmond Chapman, a distinguished surgeon and accoucheur, who has the merit of having been the first to give a representation and description of it in 1732, above sixty years after its first introduction by its inventors. Chapman distinguished himself in London by his skill and experience in difficult labours, in which,

when any other part besides the head presented, and even in some cases of head presentations, he turned the child and delivered it by the feet; and in many cases, in which it had been usual to employ the crotchet, he was in the habit of using the forceps. So carefully had the Chamberlens guarded the secret of this instrument, that no account whatever had been published of it before that given, as we have just mentioned, by Butter, and the fuller one given by Chapman,* in his Treatise on Midwifery. The latter was a work of considerable merit, containing, among other things, an accurate figure and description of this instrument, which he had improved considerably, accompanied by an ample detail of cases. Sometimes he employed a fillet, but on the whole preferred the forceps. Chapman justly condemned Deventer's rude practice of forcing back the *os coccygis* in difficult cases, and combated the opinion advanced by that writer, that labour is frequently prolonged by the oblique position of the uterus in the pelvis. He also answered the attack† already spoken of, as having been made by Douglas on the *midmen*, as he calls them, and defended the accoucheurs with considerable ability against his strictures.

In 1732 also appeared a general View of the State of Physic,‡ with a plan for its improvement, written by Dr. Clifton, who commenced his work

* Treatise on the improvement of midwifery, chiefly in regard to the operation : with cases, 8vo. Lond. 1732.

† A reply to Douglas's short account of the state of midwifery in London, 8vo. 1737.

‡ The state of physic, ancient and modern briefly considered, with a plan for improving it, Lond. 8vo. 1732.

with a Compendium of Medical History, written after the manner of Friend's, but by no means with equal accuracy. He is decidedly partial to the empirics, among whom he ranks Hippocrates, but is as decidedly hostile to Galen. He proposed to compel physicians by law to keep registers of their cases, to be recorded in an institution formed for the purpose,—these records to be limited to a detail of symptoms and practice. In a work* published in the preceding year, he recommended the warm bath in small pox, and condemned the purgative plan recommended by Mead and Freind.

In 1737 J. G. de Hahn published an Account† of the destructive Epidemic which proved so fatal in that year at Breslaw, in Silesia, in which we meet the first trace of the practice of cold affusion in fever among the inhabitants of Europe. De Hahn himself laboured under the epidemic, and was cured, as he tells us himself, by "*peregrina illa multis visa medendi methodus*." In this complaint, in which the mortality is represented as dreadful, and the panic produced as general, the method of cold affusion was not tried till after every other plan of cure had been resorted to in vain. In the first case in which it was employed, that of a merchant at the age of thirty-two, seven days were suffered to elapse before they had recourse to it, and then it was only through the medium of sponges: "*tum ad externas illas hu-*

* A plain and sure way of practising physick, 8vo. Lond. 1731.

† "Epidemia verna quæ Wratislaviam, anno 1737, afflixit;" inserted in the appendix to the "Acta Physico-Medica Germanica." Vol. X.

nectationes confugiebamus, indefessá operá spongiis omnem corporis ambitum demulcentes :" yet even this tardy and imperfect mode of employing the application of cold was productive of the most favourable results; while in a perfectly similar case, in which *the cold practice was rejected, the patient died*. His own case, which he details most minutely, exceeded in severity even those previously detailed; and he was almost in the last stage of the complaint, trembling on the very margin of the tomb, and his lamp of life quivering in the socket, before a trial was made of this omnipotent remedy. It was the fourteenth day from the commencement, and cold sweats had come on with a failure of speech and an involuntary discharge of urine, yet from this apparently hopeless condition he was recovered by freely sponging with cold water. "While the laws," however, as Dr. Currie very justly remarks in his Commentary upon these cases, "while the laws by which the affusion of cold water ought to be regulated were not understood, the use of the remedy must have been extremely hazardous, and the fatal consequences of its *improper* application we can easily believe to have prevented its gaining any ground on the continent, or having been adopted in Britain. Those laws are now, I hope, ascertained by ample experience; and practitioners will, I trust, find themselves directed in safety in the future use of this powerful remedy."*

Abraham Kaan Boerhaave, grandson to the illustrious Professor at Leyden, published, in 1738,

* Med. rep. vol. i. p. 78. ed. 4. Lond. 1805.

a work,* in which he demonstrated the existence of insensible perspiration, both from the external surface of the body and from the internal surface of all the principal cavities; and a few years after, he composed another work,† in which he explains the action of the mind upon the body through the medium of the nerves; and treats of the structure and motion of the muscles, and the effects of opium administered to a dog. He also describes the anatomy of the elephant, which he had an opportunity of dissecting, as well as of two monstrous children; and adds a dissertation upon what are improperly denominated hermaphrodites.

In 1739 appeared the first volume of the celebrated Albert Haller's Commentaries‡ upon the Lectures of his former master Boerhaave; a work which will long maintain its reputation. The publication was not completed before 1744.

Few things are more repugnant to the dictates of humanity, or productive of more melancholy results, than the system of hasty interment so universally and indiscriminately enforced by law in France. The evils of this practice which cannot fail to be apparent to all who duly consider the matter, appeared of such magnitude to John James Bruhiere, a native of Beauvais, and a man of a feeling and benevolent disposition, as to require a legislative remedy; and, with

* *Perspiratio dicta Hippocrati per universum corpus anatomice illustrata.*

† *Impetum faciens dictum Hippocrati, per corpus consentiens, philologice et physiologice illustratum, 12mo. Lugduni Batavorum, 1745.*

‡ *Commentarii ad Hermannii Boerhaave prelectiones academicas, &c, 7 vols. 8vo. 1739-44.*

a view to call attention to the subject, he published, in 1742, a work on the great Uncertainty of the Signs of Death, and the impropriety of hasty Interments.* To put this matter in the strongest light, he was at the pains to collect a multitude of cases of persons supposed to have been dead, who had afterwards recovered, some of them even after interment. Bodies, as he very properly remarks, should not be interred, at least where the slightest doubt exists, till after decomposition has actually commenced. In a later work on the same subject† he contends, that burial should not take place before the fourth day; and, in an addition to his Memoir, he gave farther examples of persons who had come to life after interment. These works of Bruhiere, which have been extensively translated and circulated, have, it may be hoped, been the means of saving many valuable lives.

About this time, Frère Jean de St. Cosme or Come, a monk of the order of Feuillans, acquired great reputation by his skill in Lithotomy, which he practised without emolument, from the most disinterested motives of humanity. Partly from this circumstance, but still more from the reputation he enjoyed for success, he had so much occupation with patients of this description as to interfere with the practice of the regular surgeons, and excite their hostility. He had been regularly bred a surgeon himself before he retired from the world; and he employed for operating what he called his "*litho-*

* Dissertation sur l'incertitude des signes de la mort, et l'abus des enterremens et embaumemens précipités. Paris. 1742.

† Mémoire sur la nécessité d'un règlement général au sujet des enterremens. Paris, 1745

tome caché," a hollow tube concealing a knife, with which he cut through the prostate gland into the bladder, making the aperture sufficiently large to extract the stone without injury to the parts, a circumstance to which his great success was probably owing. The surgeons, alarmed at his growing celebrity, applied to the King to interdict his practising; but failing in their object, endeavoured to check him through the medium of the press, criticising his Dissertation on the mode of operating, which was published in the *Journal des Savans* in 1748, and attacked in the following year by M. de Cat,* to which attack Cosme replied, in 1751,† in a work consisting of a number of cases and observations, wherein he admits some instances of failure, and the loss of one patient by hæmorrhage, but, at the same time, challenges his adversaries to produce as copious lists of successful cases as his. That his success arose, however, more from his own personal dexterity in operating, than from any superiority in the instrument he employed, appears probable, from the disuse of the latter almost as soon as it ceased to be directed by his master-hand.

In 1753 Walter van Doevert, a skilful anatomist, accoucheur, and professor of medicine, at Leyden, published a Treatise on intestinal Worms,‡ containing an accurate description of the various kinds which infest the human body, with the most

* Lettre au sujet de lithotome caché, &c. contre F. Cosme, dissertation. Par. 1749.

† Recueil des pièces importantes sur l'opération de la Taille. 1751.

‡ Dissertatio de vermibus in intestinis hominum genitis. Lugd. Bat. 1753.

approved treatment of the disorders which they produce. His most valuable work is his *Anatomical Account of various Monsters**, &c., in which he notices the rupture of the bladder in pregnant women, and of the uterus during a difficult labour: he also speaks of the successful extirpation of a polypus in the uterus by means of a ligature.

John Huxham, an eminent practitioner at Plymouth, where he enjoyed considerable reputation and, if we may judge from his writings, extensive practice, distinguished himself considerably as a medical writer about this period, having, as he informs us himself in the preface to his *Essay on Fevers*†, (of which the third edition appeared in 1757,) published about ten years before a volume of observations on Air and Epidemic diseases, from 1727 to the end of 1737‡, and having, at the time of writing that preface, an additional volume of similar observations from 1738 to 1747 inclusive, ready for the press. Huxham, although he founded his practice on the basis of experience, was an advocate for the study of the doctrines and practice of the ancients, and more especially of Hippocrates; for although he does not by any means suppose that a man cannot become a good physician without drinking from the fountains of antiquity, he expresses his firm conviction that he will

* *Observationum anatomicarum ad monstrorum historiam, anatomiam, pathologiam, et artem obstetricam præcipue spectantium*, 4to. Groningen, 1765.

† *An Essay on Fevers*, to which is now added a dissertation on the malignant ulcerous sore throat. Third edition, Lond. 1757, 8vo.

‡ *Observationes de Aëre et Morbis Epidemicis*, &c. 3 v. 8vo.

make a better physician by this means. He is of opinion that had the course laid down by Hippocrates been strictly followed by all his successors, the art of healing would have been carried to far greater perfection than it has been, and would have kept a more even pace with the numerous and brilliant discoveries made in all the collateral branches. He declares himself favourable to rational theory in physic, regarding it as the basis of all just and regular practice; but such theory should be, as Hippocrates recommends, *Κατὰ φύσιν θεωρέων**. The Doctor then takes a brief review of some of the principal writers of the ancients, among whom he awards the palm to Celsus, of whom he says that "his Latinity is most elegant, his Physic and Surgery surprisingly just†." He remarks that none have followed Hippocrates more closely than Aretæus of Cappadocia, who has even affected his very words and style. He expresses a just surprise that no one should have noticed Aretæus before Ætius, who wrote in the fifth century; (the *Euporista*, ascribed to Dioscorides, in which his name occurs, being generally allowed to be spurious;) and declares his conviction that Aretæus did not flourish till after the time of Nero. He remarks the coincidence in many points between the writings of Archigenes and Aretæus, especially their both recommending some particular remedies scarcely to be met with in other writers, such as the external use of can-

* De Vict. ac. sectut. xlvi. Edit. Lindeni.

† Preface, page viii. edit. 3.

tharides, which is only mentioned by these writers and Celsus. From this, in conjunction with the silence of Galen, Juvenal, Oribasius, and others who notice Archigenes, but are silent respecting Aretæus, he concludes that the latter lived at a much later period, and borrowed from, or new modelled the works of the former. To Cælius Aurelianus he gives the praise of accuracy in his descriptions of disease, notwithstanding the many barbarisms of his style; and he particularly commends Alexander of Trallis, who, although a close follower of Hippocrates and Galen, whom he styles *θειότατοι*, displays considerable originality of thought, and correctness of observation. In his chapter on putrid and malignant fevers, he points out an error* committed by the great Sydenham, in regarding all fevers as inflammatory, and shews that however applicable the depletory practice he recommends may be to those of a truly inflammatory character, it is perfectly unsuitable where the typhoid character prevails.

Of this celebrated practitioner but few biographical notices exist, and these are chiefly to be found in an account of his life written, from very meagre materials, by the late excellent Dr. Woollcombe of Plymouth, who has done all the justice in his power to the memory of his fellow-townsmen. We learn from his works that he was a Fellow of the College of Physicians, and from other sources, that he was father to John Corham Huxham, of Exeter College, Oxford, who took the degree of Master on the 20th of March 1746, and is the

* Essay on Fevers, p. 100. edit. 3.

only person of that name in the Catalogue of Graduates published in 1801. Dr. Huxham was a Fellow of the Royal Society, to whose transactions he contributed many papers on pathology and morbid anatomy. He has left few formulæ of medicines in his works, because, as he observes with Hippocrates, "He that knows the disease knows what is proper to cure it."* In his chapter on putrid and malignant fevers, however, he gives a formula for the excellent tincture of bark† which yet bears his name, and is one of the best preparations of that valuable remedy which we possess. He appears, from the short sketch inserted in Rees' Cyclopaedia, to have died at Plymouth in 1768, and it is to be regretted that his son, who published the third volume of his observations on the Epidemics prevalent in the neighbourhood of Plymouth, in 1770, two years after his decease, should not have availed himself of that opportunity to perpetuate some biographical particulars of a man who deserved so well of science.

For the first time in the annals of Medicine our attention is demanded to the medical transactions of our transatlantic brethren; among whom the first dawning of a medical school appears in the courses of lectures on Anatomy and Surgery delivered in 1763 and 1764, to a small class at Philadelphia, (a town which seems ever to have taken the lead in the improvement of science,) by Dr. William

* Preface page xiii. edit. 3.

† Essay on Fevers, page 122. edit. 3.

Shippen. In 1765, lectures on the Institutes of Medicine, and the Practice of Physic, were read at the same place by Dr. John Morgan, and again in 1768, by the venerable Dr. Kuhn, who, having been a pupil of Linnæus and graduated the preceding year at Edinburgh, was made Professor of Botany and Materia Medica;—to which catalogue of teachers the name of the illustrious Benjamin Rush, the Hippocrates of Colombia, was added on his return to America in 1769, after having completed his studies at Edinburgh under that galaxy of medical luminaries, the elder Monro, Gregory, Cullen, and Black. The necessity of proceeding briefly to the close of the present work precludes the possibility of dwelling on the conspicuous merits of this great man, the worthy namesake, and fellow citizen of that great and good man, Benjamin Franklin, who was the father, as he may be justly deemed, of modern electricity, and the first who, rivalling the boldness of Prometheus, dared to light the torch of science with fire taken from heaven itself.

The organization of the Medical School at Philadelphia cannot, however, be regarded as complete, or its existence established upon a permanent basis, before the year 1791, in which the Medical College at Philadelphia, which had previously subsisted as two distinct and independent establishments, was consolidated by incorporation into the University of Pennsylvania, and Dr. Rush appointed Professor of the Institutes of Medicine and Clinical Practice. This eminent professor and amiable man, who may justly be regarded as

the founder of medical science in his native country, and who, as a writer, was distinguished not only for the multiplicity and variety, but also for the vigour, accuracy, and originality of his productions, terminated his active life on the 18th of April, 1814, in his 69th year. His descriptions of disease are exceeded by none in minuteness and accuracy and are excellent models for succeeding writers: and his accounts of the several epidemics of the United States rank with those of Sydenham and Boerhaave.

In 1764, a dispute arose among the obstetric practitioners in Paris, on a question of considerable importance as connected with legitimacy of birth, and descent of property. A woman having been delivered of a child ten months and seventeen days after the death of her husband,—John Le Bas, a surgeon and accoucheur of eminence, was called upon for his opinion as to the infant's being the child of its supposed father, and gave it in favour of its legitimacy, supporting his decisions on the authority of Aristotle, Pliny, Shenkins, and other dealers in the marvellous, as well as on judicial decisions in various parts of Europe, in favour of births protracted even to twelve months, which he deemed to be within the limits of possibility. On an appeal to another court, however, Paré, Bouvart, Lewis, Petit, and others, gave opinions in direct opposition to that of Le Bas, limiting the time of parturition to nine calendar months, or about forty weeks from the period of conception, admitting indeed a possible extension of this time to ten or twenty days, but denying that in any one well

authenticated case, proof had been given of the birth of a living child after a more protracted period. The controversy upon this point was long and furious, but the opinion of Paré ultimately prevailed, and is now generally received.

To the suggestions of the learned and classical Heberden, given to the College of Physicians in 1766, science is indebted for the publication of the Medical Transactions, in which he proposed to embody such observations as might have occurred to any of the members of that learned body as being calculated to illustrate the history or cure of diseases. Dr. Heberden himself contributed largely from his own redundant stores to the contents of those volumes which have appeared. Among other contributions from his pen will be found the first description of Angina Pectoris as an idiopathic disease; and the first accurate description of the chicken-pock, clearly distinguishing between that and small pox, with which it is too frequently confounded. After his death, in 1801 at the age of 91 years, his Commentaries on the History and Cure of Diseases* were first published (in 1802) by his son Dr. William Heberden, with a dedication prefixed to George III, and a concise biographical sketch of his father: this was accompanied at the same time by an English copy printed from the author's own MS.

The first printed notice we have of the phenomena of galvanism is to be found in a work pub-

* *Gulielmi Heberden Commentarii de Morborum Historia et Curatione*, 1 vol. 8vo. 1802. Editio altera, 1807.

lished in 1767 by George Sultzer,* a native of Winterther in the Canton of Zurich, under the title of "*The General Theory of Pleasures*," in which he mentions the sensation produced upon the tongue by the contact of two different metals with the tongue interposed. All natural phenomena being at this period accounted for on the doctrine of vibration, Sultzer explained the sensation thus produced on this principle; and this solution satisfying the world for the time, the brilliant discovery of galvanism was suffered to slumber in ignominious obscurity for a farther period of nearly forty years, till dragged to light by the genius of Galvani, and illustrated by the researches of succeeding philosophers.

An improvement in the manner of reducing hernia was introduced, in 1768, by Lewis Le Blanc, (a skilful surgeon and lithotomist, who practised at Orleans in France,) in a work† which he first published in that year: in this he recommends dilating the ring, if possible, (as he says is the case in recent ruptures,) with the finger, if not, with a pair of forceps of his own invention, in place of using the knife. This method being objected to by Anthony Louis, Le Blanc replied in a Dissertation, published in the fourth volume of the *Memoirs of the Academy of Surgery*.—When the hernia has been reduced by his method, no truss is required, as invariably happens when

* John George Sultzer, the youngest of twenty-five children, was born 1720, and had the misfortune to lose his parents on the same day in 1734.

† Nouvelle méthode d'opérer des hernies, 8vo. 1768.

the ring has been divided: the forceps are introduced into the ring in a closed state, and open afterwards by means of a spring. In 1775 he republished this work, along with his Dissertations on Lithotomy,* and on the method of extracting small portions of the placenta left behind in the uterus, together with farther remarks on hernia, in his general work on the Operations of Surgery.†

In 1771 appeared the first edition of a work which, whatever its merits, acquired, almost from the instant of its publication, a popularity almost unprecedented in the annals of bibliography; this was the celebrated, and even yet highly popular, 'Domestic Medicine' of William Buchan, founded upon the model of Tissot's "*Avis aux peuples*," to which it is in no respect inferior. This plan of exhibiting the method of treating diseases in a popular form has been strongly but unjustly censured, as tending to lower the profession in public estimation, and to diminish their gains. Notwithstanding the enormous sale of Dr. Buchan's work—of which no fewer than nineteen editions, averaging, at least, five thousand copies each, or ninety-five thousand copies in all, were disposed of within the first forty years after its appearance,—we do not find that there is one physician the less employed, or one fee the less taken. In fact, works of this description, like popular treatises upon law, serve only to lead people on a little way, till, getting bewildered in the

* Originally published in the *Journal de Médecine*, vols. 30, 35, and 39.

† *Précis d'opérations de Chirurgie*, 2 vols. 8vo. 1775.

labyrinth, they are glad to implore the aid of professional guides to extricate them. The complaint which a single visit of the physician, aided by the expenditure of a few shillings in medicine, might have arrested in the infancy of its course, gains head under the imbecile attempts of ignorance to subdue it, and multiplies the gains of the physician, the surgeon, and the apothecary, fully an hundred-fold. But the popularity of Buchan's work was not confined to his own age, his own country, or his own language; its fame has long outlived its author, and it was translated into the language, and circulated in the territories of almost every nation in Europe, and procured him the honour, not only of a gold medal, but of what, it is probable, he prized still more highly, an autograph letter from the Empress of Russia.

It having occurred to the celebrated Dr. Jenner, an eminent practitioner in the county of Gloucester, as a somewhat remarkable circumstance, that there were many of those whom he met with in practice whose constitutions were proof against the assaults of small pox, he was led, about the year 1776, to undertake the investigation of the cause of so remarkable a fact; in the progress of which he learnt, that those whom he had found thus fortified against the contagion of variola, had undergone the *casual cow-pox*, a complaint familiar from time immemorial in the dairy districts of that county, and reputed, in the popular opinion of the inhabitants, to be a preventative of the small pox. Upon farther inquiry he found some *apparent* exceptions to this rule, but, pushing his

investigations farther, he discovered these exceptions to result from the circumstance of the cow being subject to a variety of pustular eruptions differing widely in their nature, although indiscriminately classed by the ignorant under the name of cow-pox; one only of which was the genuine and unfailing prophylactic against the devastations of small-pox. Having, after a variety of researches, arrived at length at this stage of his inquiries, it occurred to him that this complaint, like variola, might be communicated by inoculation; a conjecture the truth of which was triumphantly confirmed by a multitude of the most decisive experiments. In 1778 Mr. Cline successfully inoculated a child with virus received from Dr. Jenner, (who had, in the preceding month, given his first publication on the subject to the world,*) and afterwards exposed the child to the test of variolous inoculation in three places, but without producing the slightest effect. Upon this occasion Mr. Cline assured Dr. Jenner, that both he and Dr. Lister, who had been physician to the small-pox hospital, were fully convinced of the efficacy of the vaccine inoculation, and that the substitution of this mild, manageable, uncontagious disease for small pox, promised to prove one of the greatest improvements in modern practice.

The merit which thus indisputably belongs to Mr. Cline of having vaccinated the first patient in

* An Inquiry into the causes and effects of the variolæ vaccinae, a disease discovered in some of the western counties of England, particularly in Gloucestershire, and known by the name of the cow-pox. 1798.

London, has been attempted to be taken from him by the claim of another practitioner, which is far from resting on an equally solid foundation.*

To follow the history of this valuable discovery through all the fluctuations of its progress to triumphant maturity, would be foreign to the design of a work whose essence is conciseness: and it must be sufficient to add, that truth has at length triumphed over ignorance, selfishness, and envy—and, if the tooth of calumny still makes puny efforts to corrode the adamantine pillar of Jenner's well earned fame, her efforts only resemble those of the viper against the file—reacting upon herself, and making her the victim of wounds designed for another.

During the greater part of this century the School of Medicine, at Edinburgh, of which the elder Monro may justly be regarded as the founder, enjoyed a succession of teachers unrivalled, perhaps, by any university in the world; and among the number the names of Monro, Cullen, and Gregory, must not be passed over in silence.

* From a statement published in Bohemia of the number of deaths occasioned by small pox during the last thirty years, it appears that, notwithstanding the vast and rapid increase of population, the relative proportion of mortality from that complaint has been greatly lessened through the influence of vaccination. In the years 1799 and 1800, out of 125,750 children who were born, 17,000 fell victims to variola, being at the rate of 135 out of every 1,000—while the average number in 1828 hardly reached to 4 out of every 1,000. In 1809 the number of births was 134,651, of which number 13,291 died of small pox; while in 1828, out of 144,095 births, but 520 fell victims to the variolous contagion. Such has been the happy result of the extended practice of vaccination among the inhabitants of those regions.

William Cullen, one of the three, the son of respectable but by no means wealthy parents, was born at Lanark in 1712, and after experiencing a variety of vicissitudes, was appointed Professor of Chemistry at Glasgow in 1746, and in 1751 was advanced to the chair of Medicine. On an invitation to fill the chemical chair at Edinburgh, on the death of Dr. Plummer, he removed thither in 1756, and soon became as great a favourite as he had been at Glasgow; his colleague in Anatomy, the illustrious Monro, alone out-numbering the crowd of his pupils; a popularity partly to be ascribed to the novelty of his opinions, and the new theories he occasionally broached in his lectures.

On the death of Dr. Alsten, in 1760, Cullen succeeded to the chair of *Materia Medica*; on which subject he continued to lecture till 1766, when, in conjunction with the classic Gregory, he was promoted to the chair of Medicine in the place of Rutherford, and resigned the Chemical chair to Black. Gregory dying in the following year, Cullen held the sceptre of Medicine with undisputed sway for the rest of his life.

His Lectures on *Materia Medica* were first published from notes taken by one of his pupils in 1772; and in 1784, fearing a similar fate for those he had delivered on medicine, he published them himself.* Of this admirable work, in which he expounds his peculiar theory of Fever, our limits do not admit our giving the slightest analysis; but as we have already

* First Lines of the practice of physick, 4 vols. 8vo. Edinburgh, 1784.

referred to the rules he laid down for venesection, some abstract of them becomes indispensable. The circumstances under which, and the manner in which this operation should be conducted, are thus laid down by Cullen :—" 1st. The nature of the prevailing epidemic. 2nd. The nature of the remote cause. 3rd. The season and climate in which the disease occurs. 4th. The degree of phlogistic diathesis present. 5th. The period of the disease. 6th. The age, vigour, and plethoric state of the patient. 7th. The patient's former diseases, and habits of blood-letting. 8th. The appearance of the blood drawn out. 9th. The effects of the blood-letting that may have been already practised. When, after the due consideration of these circumstances, blood-letting is determined to be necessary, it should be observed, that it is *more effectual*, accordingly as the blood is *more suddenly drawn off*, and as the body is, at the same time, more free from all irritation, and, consequently, when in a posture in which the fewest muscles are in action.*"

On taking possession of the chair of Medicine at Edinburgh, Cullen found the system of Boerhaave, which he had himself learned in youth, the prevailing and indeed the only system in existence, and, seeing its defects, he set about endeavouring to amend them: how far he succeeded, the popularity and rapid extension of his doctrines fully attest.

* First Lines, vol. 1, ch. vi. sect. 1. cxlii and cxliii.

Cullen's most esteemed work is his *Nosology*,* exhibiting the nosological system of Sauvages, Linnæus, Vogel, Sagar, and Macbride, in the first, and his own method of arrangement in the second volume. The fourth edition, published in 1785, contains his latest corrections. Cullen continued to fill his post with equal dignity and talent nearly to the instant of his death, retaining his faculties, and especially the soundness of his memory, and the distinctness, clearness, and precision of his delivery, to the last. His Lectures were not committed to writing, but delivered from short notes, upon which he framed an extemporaneous commentary, expressed with ease, with fluency, with conciseness, and yet with elegance. He continued to deliver his lectures till within a few months of his death, which took place on the 5th of February, 1790, in his seventy-seventh year.

The name of that eccentric and ill-regulated genius John Brown, (who, with all the fiery brilliancy of a comet's blaze, and with more than a comet's irregularity of course, approached the perihelion of our northern luminary, only to recede from him with augmented velocity into the endless regions of absurdity,) has become so inseparably connected with that of his illustrious opponent Cullen, that, narrow as are the limits into which the present work is now necessarily contracted,

* *Synopsis Nosologiæ methodicæ*. Ed. 4ta. 2 Tom. 8vo. Edinburgii, 1785.

some mention, however slight, must be made of him, and of that theory to whose practical effects he was himself a victim, and whose absurdities are fast sinking into oblivion, while the very blemishes of his rival's doctrines are remembered with respect.

John Brown was born of parents in the humblest and poorest class of Scotch peasantry, residing in the parish of Bundle, in Berwickshire, where he first saw the light in 1735. To follow him through all the vicissitudes of his early life, and recapitulate the irregularities which served at once to mark his genius, and to mar his fortunes, would be to swell this outline far beyond its just proportions. His original destination was the church, and his first visit to Edinburgh, in 1755, was with a view to the study of theology; he had even delivered his probationary discourse preparatory to ordination, when, in one of those unaccountable freaks to which he was subject, he abruptly quitted Edinburgh, and returning to the school at which he had been educated, resumed the drudgery of an usher. During this period we find him flying with his usual velocity from the extreme of puritanism, to its opposite of licentiousness, debauchery, and free-thinking.

At length, in 1759, he offered himself, but without success, for a vacancy in the High School at Edinburgh; and soon after commenced the trade of writing or translating Inaugural Theses, for those who either had not talent or were deficient in the erudition requisite to the performance of the task for themselves. This occupation diverted his

thoughts to the study of Medicine ; and, had he possessed that stability which would have been of more essential service to him than all the flashy splendour of his meteoric talents, he might rapidly have risen to wealth and fame ; but his habits of intemperance sapped at once his reputation, his fortune, and his constitution. At this period, however, his good fortune led him to an acquaintance with our british Boerhaave, the learned and benevolent Cullen, who employed him as a tutor for his sons, and an assistant at his lectures, the substance of which Brown repeated and expounded in the evening to his pupils. Having married, and opened a house for boarders, which was rapidly filled, he might yet have recovered himself, had not the invincible improvidence of his disposition, continuing to be his bane, involved him in bankruptcy. Three or four years after, he became a candidate for a Professor's chair in the University, but failing, chiefly, as he imagined, through the influence of Cullen, he at once cast away all remembrance of his past kindness, regarded him with the most determined hostility, and resolved on opposing him as a rival, and setting up a system founded upon principles as widely removed as possible from those of the venerable professor of Medicine. Little addicted to profound study, and but imperfectly acquainted with the doctrines of authors, the theory which he now broached was necessarily the fruit of reflection, rather than study or experience ; and that his natural propensity for spirits had considerable influence in its formation, may almost be inferred from in-

ternal evidence, and from the effect he ascribed to them of mitigating the severity of fits of the gout. He now commenced a course of lectures for the purpose of expounding his new and anti-Culleniansystem, the singularity of which attracted multitudes of pupils. Preparatorily to these, on each evening, he gave a practical illustration of his doctrines, by taking fifty drops of the tincture of opium in a glass of whiskey, and he repeated the dose four or five times before he reached the conclusion. This artificial stimulus braced his nerves, and fired his imagination, as he proceeded in the developement of his doctrines. His object appears to have been to simplify medicine, and render it easier of access to those who disliked the labour of study, and desired short cuts in the road to knowledge. With this view he reduced disorders to two great classes, *sthenic*, and *asthenic* : the first proceeding from an excess, the latter from a deficiency of the *exciting* power. Disorders of the first class were to be relieved by *debilitating*, and the latter counteracted by *stimulating* remedies ; of which description he regarded brandy, wine, and opium as the most potent, and the most valuable. *Asthenic* complaints being, according to his view of the subject, the most numerous, his opportunities of calling in the aid of these powerful auxiliaries were proportionably increased. Spasmodic complaints, and even hæmorrhages were referred by him to the *asthenic* class, and wine and brandy, hitherto regarded as prejudicial, recommended as the best remedies. Having at length digested his system, he gave it

to the world under the title of “ *Elementa Medicinæ*,” a work which is now chiefly regarded for the eccentricity of its doctrines, and the celebrity it once possessed.—Notwithstanding the hosts of auditors whom the novelty of his system at first attracted, the irregularity of his attendance, and his increasing habits of intemperance, concurred with the manifest absurdities of his theory to cause a rapid diminution of their numbers, and, his circumstances again becoming involved, he removed to London in 1786. Here he experienced, for a time, a favourable reception; but, giving the rein to his habits of intemperance, and returning to his lodgings in a state of intoxication, on the evening of the 8th of October, 1788, he took, according to custom, a large dose of laudanum—and was found a corpse in the morning; thus furnishing a practical illustration of the results of his own doctrines, before he had completed his arrangements for a course of lectures on the subject.

His “ *Observations on the Old System of Physic*,” which he had published during the year that preceded his death, as a preparation for the reception of his own hallucinations, attracted but little notice; and his visionary doctrines gained more ground among foreigners than his own countrymen. His opinions are sinking fast into merited oblivion, and his name only survives through its connection with that of his distinguished rival.

It has already been mentioned, when speaking

of the illustrious Cullen, that he was appointed, in conjunction with Dr. James Gregory, another star of the very first magnitude in our northern galaxy, to supply the place of Dr. Rutherford, in the chair of medicine in the year 1776, and that in the following year the unfortunate death of his valuable colleague left him sole monarch of the throne of Medicine.

Of Dr. Gregory neither materials nor space permit our giving any personal account, but it would be unpardonable to pass without notice his work on the Theory of Medicine, that work which has conferred immortality upon his name, and honour on his country. Our observations relating to him must be gleaned from a posthumous edition of the work itself.*

From the preface prefixed to the second edition of this work (which could not have been published much later than 1776, since its author, who wrote that preface, closed his earthly labours in the following year,) we learn that the first part of the work, comprising physiology, and pathology, had been published eight years before, or not later than 1768 or 1769, and that the flattering reception which, even in that unfinished state, the work experienced, induced, or almost compelled him, during the scanty intervals of leisure which his professional practice and professional duties af-

* *Conspectus Medicinæ Theoreticæ, ad usum Academicum. Editio Tertia, prioribus auctior et emendatior. 2 vols. 8vo. Edinburgii, 1788.*

forded, to complete this imperfect sketch. He thus presented to the world, a finished and incomparable work, which will long remain a standard of pure latinity and sound pathology. The work, completed, and rendered truly "*ad unguem factus libellus*," he divided into two volumes, as he says himself: "His modis haud parum auctum, ne quid formidinis haberet volumen nimis crassum, in duos tomos dividendum curavi, adeo graciles, ut forma, saltem, vel delicatissimos lectores non terreant."*

To attempt even the slightest analysis of a work of such extent and of such vast importance, as the chaste and classical production of Dr. Gregory's master genius, within the narrow limits remaining for the present volume, would be as impracticable, as it would be absurd, and would serve only to tantalize, without satisfying the reader. Like the productions of Raphael, and the beauties of Titian, the original of Gregory's noble conceptions must be consulted in order to form a just conception of their excellence; to appreciate duly the qualities of the stream, we must seek it as it springs pure and uncontaminated from the parent rock; as some sketch however, of so splendid a monument of British erudition may not unreasonably be expected, an outline of its contents shall be attempted, however faint and defective the image it must afford of the classic original.

The first volume, which extends considerably beyond five hundred pages, is devoted to an investigation of the physiology and pathology of medicine,

* Præfat, p. 3. Ed. tertia.

distributed into twenty-three chapters, commencing with a general account of the functions of the living body, and closing with a description of the several varieties of constitution observable among men. The functions of the body are divided into *animal* and *vital*, the former comprising those which belong to our senses, and voluntary motions, "quibus" as the author elegantly expresses himself "quantumvis simplicibus, mundum cognoscimus, terrarum potimur:" the second, those which are so essential to life as not to admit of the slightest interruption or suspension, without instantly endangering the continuance of existence; as the action of the brain and nerves, the circulation of the blood, and respiration. His description of the progress of a man from the cradle to the grave, from the helplessness of infancy to the decrepitude of age, is so concise, so just, and at the same time so poetically beautiful, and so eloquently expressive, and furnishes so admirable a specimen of the classical purity of his style, that it would be an injustice to those who may read this volume, were we to omit to transcribe it:—"Sed ipse terrarum, et, quæ eas incolunt, animalium dominus, parvus, debilis, fatuus, omnium rerum inops nascitur: sola parentum cura, diu conservatur, fovetur, alitur: paulatim crescit, pubescit, adolescit, sapit; forma, et animi et corporis viribus, parentes æquat; eadem gaudet exercere munera; tandem, ingravescentibus annis, communem sortem subiturus."*

* Although it would be a vain attempt, with anything less

In the last chapter of this volume, devoted to an examination of the diversities of constitution, he justly observes that the shades of health are as various as the shades of complexion and the diversity of feature: he points out the folly of attempting to account for the variety of temperaments upon the principles of the ancients, and confines himself to an explanation of the nature of these temperaments, without bewildering himself, or misleading his readers, by a vain inquiry into the hidden causes which produce them. The second volume, equalling its companion in bulk, is devoted to the subject of therapeutics, and, after a general examination of the fundamental principles of this science, given in the first chapter, the nineteen which remain are occupied with a more minute investigation of the various descriptions of remedies, and the manner of their employment.

Upon the whole, Gregory's Conspectus is an honour to the age which produced as well as to the author who wrote it, and it merits a place beside the

than the fire of a Gregory's pen, to transfuse the slightest portion of the spirit of this exquisite description into a translation, yet for the benefit of the exclusively English reader a version is given:—

“But man himself, lord of this mighty globe, and every animated being it contains, enters upon life small, weak, silly, destitute of every thing: by the unceasing vigilance of parental affection alone, during many years, he is preserved, cherished, supported: by degrees he grows in stature, attains to maturity, and acquires understanding: he assumes an equality of form, mind, and bodily strength, with his parents; and at length, borne down with the weight of growing years, shares the common fate.” *Conspect. Med. Theor. Cap. 1. Vol. 1. p. 6. 14.*

volumes of Cicero, of Livy, and of Tacitus, in the library of the scholar, no less than on the table of the physician.

In an Italian work* published in 1786, five years before the appearance of Galvani's account of his discoveries, we find an additional circumstance, connected with the history of those discoveries, which is too curious and too interesting to be passed without notice. The narrative is given by M. Cottugno. "A medical student feeling a smarting sensation in the lower extremity of his leg, applied his hand to the part, and caught a mouse by which he had been bitten. Having killed, he resolved to dissect it, and, touching the intercostal nerve with his knife, was not a little surprised at experiencing an electrical sensation, sufficiently powerful to benumb his hand."

This fact awakened the curiosity of M. Vassali of the Royal Academy of Turin, who made in consequence a series of experiments on the subject, the details of which appeared in 1789.

Still, however, the experiment related by Sultzer, the fact communicated by Mr. Cottugno, and the reasoning and experiments of Vassali, continued only as isolated particulars, unconnected by any general or comprehensive views, and forming but the useless and disjointed fragments of a science from which no rational principles could be deduced, and no practical utility derived, till, in the year 1792, the celebrated Galvani laid the foundation of that splendid science which it re-

* Journal Encyclopédique de Bologne. No. viii. 1786. .

mained for our distinguished countryman Davy to complete, by the publication of his interesting experiments in the first work* which he gave to the public on the subject. This immediately excited universal attention, and in the hands of Volta and De Luc, the agent was increased in power to a great extent ; and, guided by the genius of Davy, has already led to the most important and unexpected discoveries respecting the composition of substances till then believed to be simple.

Although the discovery of galvanism falls within the limits of the eighteenth, its history belongs to the nineteenth century. Some notice, however, is due to the memory of the manto whom science is indebted for so important an addition to her stores, and electricity for such a wonderful extension of her powers.

Louis Galvani, from whom, as the first philosophic investigator of its principles, the science of which he laid the foundation justly derives its name, was born at Bologna on the ninth of September 1737 : and having commenced his studies at an early age and taken his degrees in physic, was, while yet almost a youth, appointed to fill the anatomical chair in the university of his native town. In early youth he manifested a strong propensity for religious austerities, but was, fortunately for science, dissuaded by his friends from burying his talents in the useless oblivion of a convent, and induced to devote them to the ac-

* Aloysii Galvani de viribus Electricitatis in motu musculari commentarius. Mutinæ, 1792.

tive service of his fellow creatures and the prosecution of useful studies. So admirable was the method he pursued in the arduous task of communicating instruction, that his lectures were crowded with pupils, and his fame spread with rapidity. His researches in comparative anatomy, that of birds in particular, were eminently successful; and in addition to a number of curious observations on the urinary and auditory organs of birds, which were inserted in the *Memoirs of the Institute of Bologna*, he composed a number of professional memoirs which remain yet unpublished. A singular accident led to the discovery which has immortalized his name, and been pregnant with such important results in the improvement of science. His wife, the daughter of the celebrated professor Galeazzi, to whom he was tenderly attached, being in a declining state of health, was in the habit of taking a soup prepared from frogs as a restorative. Some of these which had been skinned and prepared for the service of the kitchen, chanced to be placed upon a table in Galvani's laboratory, while he was engaged in making some experiments with an electrical apparatus which stood upon the same table with the frogs, which lay at some little distance from the prime conductor. One of the company, who was assisting Galvani in his experiments, accidentally touching the nerve of the thigh of one of the frogs with the point of a knife the muscles of the limbs became instantly and powerfully convulsed; and, as Madame Galvani who was present, and much struck with the singularity of

the phænomenon, imagined, at the instant of every spark passing from the conductor: observing this to her husband he determined to investigate the fact, and accordingly on bringing the point of the scalpel, which he held in his hand, in contact with the crural nerves of one of the frogs, he found, as his wife had pointed out, that the muscular contractions were renewed as often as a spark was taken from the conductor. As this might have resulted simply from the irritation of the scalpel and not from the disengagement of the spark, to satisfy himself on this point he touched the same nerves, while the electrical machine continued in a state of quiescence, without exciting the slightest commotion. Upon this foundation he constructed the theory of the science, which, with the various modifications which the labours of succeeding experimentors introduced, still remains a lasting and noble monument of his industry and his talents.

The death of his wife, who expired in his arms in 1790, threw him for a time into a profound melancholy from which he never wholly recovered: he rallied however sufficiently in the following year to prepare his first work upon this novel and interesting subject for the press. The appearance of this volume excited, as might have been expected, great interest, and produced much controversy which terminated only in a confirmation of the doctrines of its author. Misfortune however shrouded the latter years of this excellent man in sadness, obscurity and poverty. Refusing, from motives of conscience, to sub-

scribe the civic oath required by the revolutionary governors of the Cisalpine republic, he was deprived of his public employments, while the busy hand of death robbed him of nearly the whole of his nearest and dearest relatives in quick succession. Oppressed with melancholy and distress, he retired to seek repose from persecution in the house of his brother James, a man of credit and respectability, where he fell into a state of irrecoverable debility. He had long suffered under an excruciating affection of the stomach, which was supposed to proceed from a disease of the pylorus, the progress of which all the exertions of his physicians Cingari and Uttini could not arrest. He was at length released from his sufferings on the 4th of December 1798 in the sixty-first year of his age. The republican governors, ashamed perhaps of their severity, and relenting in their cruelty, decreed his restoration to his honours, and emoluments ; but too late ! the irrevocable decree had gone forth, and Galvani reposed in peace.

CHAPTER XV.

Progress of Anatomy during the Eighteenth Century—James Douglas, the patron and predecessor of Doctor William Hunter as a Teacher of Anatomy in London—Excellence of his anatomical preparations: publishes a specimen of comparative Myography and of Anatomical Bibliography—Cheselden: his early proficiency in Anatomy: his Anatomy of the Human body: its great popularity—Heister's Compendium of Anatomy—Monro; Foundation of the Edinburgh School of Medicine; his Osteology—Paccioni's discovery of the Glands in the Longitudinal Sinus which bear his name—Winslow—Swedenbourg—Camper—Doctor Hunter, dies suddenly of Angina Pectoris: Post Mortem appearance of the heart—Cruikshank—Hunter's gravid uterus—Bell.

THE progress of improvement in anatomy and physiology, though not marked by any discovery equal in splendour to that of the circulation in the preceding century, was by no means destitute of incidents worthy of notice, or unproductive of names deserving of record. But we must be brief in our notice of incidents, and sparing in our selection of names.

Among the earliest and most successful cultivators of anatomy, during the eighteenth century, was the celebrated James Douglas, the predecessor of

the distinguished William Hunter as a teacher of anatomy in London. He was born in Scotland in 1675, and having completed his studies, settled as a teacher in London where he experienced the greatest success. Haller who visited him, speaks highly both of him and his preparations which were made with much skill, and calculated to show both the motions of the joints and the internal structure of the bones. He appears to have been meditating, at that time, an extensive work on anatomy which he did not complete. On Doctor William Hunter's first arrival in London, Douglas took him as an assistant at his dissections, and gave him, at the same time, an opportunity of improving himself by attending St. George's Hospital. In 1707 he published his specimen of Comparative Anatomy,* containing the most correct account of the muscles which had yet appeared, and giving a comparative description of all the muscles in a man and in a dog. In 1715 appeared his specimen of Anatomical Bibliography,† in which he gave a tolerably correct account of the several works upon anatomy, with biographical sketches of the writers; a useful and instructive work, of which an improved edition appeared at Leyden in 1734. His next publication, but one, was on the subject of the peritonæum,‡ and the cellular

* *Myographiæ comparatæ specimen*, 12mo. Lond. 1707.

† *Bibliographiæ anatomicæ specimen, seu catalogus pene omnium auctorum qui ab Hippocrate ad Harveium rem anatomicam illustrarunt*, 8vo. Lond. 1715.

‡ A description of the Peritonæum, and that part of the

membrane which is situated outside it: a work of ability and drawn up with the most accurate fidelity. He had a short time before published a treatise on Lithotomy which has been noticed in the preceding chapter. Besides these works he contributed many papers to the Royal Society on the anatomy of the uterus and neighbouring vessels, with a variety of cases in surgery which were published in the Philosophical Transactions. He died in 1742.

William Cheselden, who early distinguished himself by his proficiency in anatomy, which he had studied under Cowper, became in 1711, at the age of only twenty-two, a public lecturer on anatomy and surgery. In 1713, he published his *Anatomy** accompanied by some select cases in surgery, and a syllabus of his lectures. Such was the popularity which this work acquired, that, after having made various improvements, he had the satisfaction to see it pass rapidly through six editions. To the fourth, and all the succeeding editions, he subjoined, in an appendix, a short account of the operation of lithotomy, which he performed with success on nine patients in St. Thomas' in the manner recommended by his contemporary James Douglas. Failing, however, in some later trials, he adopted the method recommended by Rau, in which he made such improvements that out of the first twenty patients

Membrana cellularis which lies on the outside of it, 4to. Lond. 1730.

* *Anatomical description of the human body: with plates*, 8vo. Lond. 1713.

on whom he operated, not one case of failure occurred. Notwithstanding the candour with which he admitted Douglas's improvements in the manner of performing the high operation, he was assailed in an anonymous pamphlet entitled "*Lithotomuscstratus*," which was attributed to the pen of some of the partizans of Douglas; but his reputation stood too proudly high to suffer from such impotent assaults. Cheselden, although a man of great tenderness, was enthusiastically attached to his profession in which his success was proportionate to the ardour with which he pursued it.

The most distinguished work of Laurence Heister, a celebrated physician, surgeon, anatomist and botanist, who has been already noticed in the last chapter, was his *Compendium of Anatomy** first published in 1717, which went through a great number of editions, and became a very popular book. It is valuable, both for its conciseness and clearness, as a physiological as well as anatomical school book. It completely superseded the work of Peter Verheyen, the defects of which he clearly exposed in his preface, and censured, not without reason, the omission of some of the principal discoveries of the English, Italian, and other anatomists.

We now reach a period the most distinguished of any in the medical annals of British History, the foundation, as it may be truly called, of the School of Medicine in Edinburgh, which has since attained, through the zeal and abilities of its

* *Compendium Anatomicum*, 8vo. 1717.

professors, the first rank among the medical seminaries of the world. This was chiefly, if not solely, effected in the first instance by the splendid talents, and unrivalled exertions of Doctor Alexander Monro, a name ever pronounced with respect. His father, a surgeon in King William's army, was resident, at the time of his birth in September 1697, on leave of absence in London. On quitting the army, Mr. Monro settled in Edinburgh where, perceiving his son's early indications of genius and strong inclination for medicine, he carefully superintended his early education and afterwards sent him to London to study anatomy under Cheselden, to which young Monro applied with the greatest industry ; he likewise devoted himself with the utmost assiduity to dissection, and the preparation of anatomical specimens, which he sent home. While here, he laid the foundation of his most important work, that on the bones ; a sketch of which he read before a society to which he belonged. From London he proceeded to Paris, and thence, in the autumn of 1718 to Leyden, where Boerhaave was at that period the mighty magnet of attraction. This distinguished teacher and acute observer made a most favourable report of his pupil, which his future eminence fully justified. Returning in 1719 to Edinburgh he was appointed professor and demonstrator of anatomy to the company of surgeons ; and soon after commenced lecturing, employing the preparations he had made during his anatomical studies, as illustrations. Doctor Alston to whom

Cullen succeeded in the chair of *Materia Medica* in 1760, at the same time concurred in Monro's plan, and commenced a course of lectures on *Materia Medica* and Botany.

These were the first public medical lectures ever delivered in Edinburgh, and were the basis of that school which has since attained to such high distinction. The plan originated with Monro's father, who, by inviting the whole college of physicians and the company of surgeons, without previously acquainting his son, led him into that mode of extemporaneous delivery which contributed so much to his future celebrity; for becoming confused at finding an audience so different from what he expected, he forgot the whole of what he had prepared for delivery, and being unprovided with notes to refresh his memory, after some slight hesitation, he began, with great presence of mind, by exhibiting some of his preparations, in order to gain time for recollection, and then commenced an extemporaneous exposition of the purport of his lecture, without the slightest reference to his premeditated materials. A regular series of medical lectures was now, through the indefatigable exertions of Doctor Monro's father established in Edinburgh; and, to crown the whole, an infirmary having been erected, endowed and incorporated by charter, a course of clinical lectures on surgery was commenced by Doctor Monro, and ultimately on the Medical cases also, by Doctor Rutherford in 1748. None, however, contributed equally with

Doctor Monro to fan the growing flame of celebrity, and raise the school of Edinburgh to the proud pre-eminence it now maintains.

His osteology, first projected when only a student in London, was now completed and given to the public for the use of his pupils: it soon, however, acquired a more extensive popularity, passing through numerous editions at home, and being translated into many European tongues abroad. To the later editions a concise account of the nerves, lacteal system and thoracic duct was subjoined.

Not content with the services he had thus performed to science, the zeal of Doctor Monro led to the formation of a society for the publication of papers on professional subjects, to the contents of whose useful volumes the pen of Monro was the most copious contributor. In 1759 he resigned the anatomical chair, which he had filled with such distinguished zeal and ability for nearly forty years, to his son, still however continuing to deliver his clinical lectures at the infirmary. At length a fungous ulcer of the bladder and rectum, the pain of which he endured with the greatest patience and fortitude, terminated his long and useful life, on the 10th of July 1767, in the seventieth year of his age.

Antonio Accioni, a native of Reggio, and distinguished for his anatomical researches, especially into the structure of the brain, dura mater, &c. pub-

* Osteology, or Treatise on the Anatomy of the Bones. Edinb. 1726.

lished in 1721 his final disquisition* respecting his favourite subject, the supposed muscular nature and action of the dura mater. Although later anatomists have refused to admit his opinions, they were maintained with considerable ingenuity, and the investigations to which the controversy led, contributed greatly to improve our acquaintance with the parts which were connected with the subject in dispute. The controversy commenced as far back as 1701. Paccioni then published his first work on the structure of the dura mater,† in which he maintained the muscular and contractile nature of the dura mater, which he imagined, by means of its connection with the tentoria, to act by alternate compression upon the cerebrum and cerebellum; this opinion being contradicted by Baglivi, Fautionie, and others, he published a second dissertation on the subject,‡ in which he announced the discovery of glands in the vicinity of the longitudinal sinus. This discovery involved him in fresh disputes with other anatomists, and produced fresh vindications of his opinions and discoveries from himself,§ in which he defended his doctrine

* *Dissertationes physico-anatomicæ de Dura Meninge humana, novis experimentis et lucubrationibus auctæ et illustratæ.* Romæ, 1721.

† *De Duræ Matris fabrica et usu, disquisitio anatomica.* Romæ, 1701.

Dissertatio epistolaris de glandulis conglobatis Duræ Meningis humanæ, indeque ortis Lymphaticis, ad piam matrem productis, ad clarissimum virum Lucam Schroeckium. Romæ, 1705.

§ *Dissertationes binæ ad spectatissimum virum Johannem Fantonum datæ, &c.* Romæ, 1713.

of the glandular structure of those parts. The glands which thus involved their discoverer in such bitter controversy are situated on the inside of the longitudinal sinus, and are connected with the opening of the veins; but, although their existence is fully admitted, the nature of their use has, by no means, been clearly ascertained.

In 1723, James Benignus Winslow, an eminent Professor of Anatomy, Physic, and Surgery, in the University of Paris, published his *Treatise on Anatomy*,* which yet maintains a high reputation, being remarkable for its clearness, conciseness, and excellence of arrangement.

To those to whom the name of Emmanuel Swedenborg is only known in connection with his mystic delusions, it may appear extraordinary to meet with it in a history of Medicine. But Swedenborg, like Swammerdam, was not always the victim of a disordered imagination and delusive fantasies, but in early life was distinguished for his gaiety, his talents, and his erudition; and, besides other works not connected with the subject of medicine, published in 1742 his great *Anatomical and Physiological work*,† in the first chapter or paragraph, as he terms it, of which he discusses the composition, and what he styles, the genuine essence of the blood; in the second he treats of the circula-

* *Exposition Anatomique de la structure du corps humain.* 4to. 1723.

† *Œconomia Regni Animalis in transactiones divisa, quarum hæc prima de sanguine ejus arteriis venis et corde agit.* 4to. Amstelodami. 1742.

tion, and the arteries and veins with their coats ; in the third, of the formation of the chick in the egg, and the first rudiments (*inchoamenta*) of the arteries, veins, and heart ; in the fourth, of the circulation before birth, the foramen ovale and arterial canal of the foetal heart ; the fifth treats of the heart of the sea-turtle ; the sixth of the coronary and other vessels belonging to the heart ; the seventh of the motion of the heart in adults, illustrated by a plate ; and the eighth and last, giving an introduction to a rational physiology, or that science which treats of the essence and the nature of the soul. Such is a brief analysis of the contents of this singular volume, which contains much erudition, not, however, unmixed with the hypothetical jargon of the day.

Theophilus de Bordeau, in a small volume which he published on the pulse in 1766,* went far beyond Solano, and far indeed beyond what can be followed in practice, in his discrimination of the endless varieties of pulse. In another work, which he published on the mucous tissue and cellular membrane, he disingenuously claimed as his own the discovery of some properties of the cellular membrane, which really were made by Haller and others. The work, nevertheless, is one of merit. He had in 1746 published a duodecimo volume of letters, on the mineral waters of Bearn.† De Bordeau imagined he had discover-

* Recherches sur le pouls par rapport aux crises. 12mo. Paris, 1756.

† Lettres contenant des essais sur l'histoire des eaux minérales du Béarn, &c. 12mo. 1746.

ed a duct leading from the thyroid gland into the trachea.

In 1760, Peter Camper, a distinguished physician and surgeon, published at Amsterdam his magnificent work on Anatomy,* the plates of which, from drawings of his own, are remarkable for their accuracy; but death, unhappily, interrupted the completion of his design. Camper, a short time before his death, published an account of his method of performing the operation of lithotomy, in a Dutch journal at Amsterdam; it had been communicated to him, he said, by M. Louis, who informed him he had not lost a patient by the operation since he had adopted it. There was little novelty, however, in the method, which had been introduced by Peter Franco, who had died nearly three centuries before, but which method had been discontinued on account of its numerous inconveniences. About the year 1774 he communicated an account of the obstetric lever of Rouenhuysen, to the royal Academy of Surgeons at Paris, who, in consequence, admitted him as a foreign associate.

In 1771 appeared the first part of a work on the Natural History of the teeth,† by Mr., afterwards

* *Demonstrationum Anatomico-pathologicarum. Liber primus, in folio maximo cum quatuor figuris: and in 1762, Liber secundus, continens pelvis humanæ fabricam et morbos. Folio. Amstelodami.*

† *On the Natural History of the Teeth. 4to. London, 1771.*

Dr. John Hunter, brother to the equally celebrated Dr. William Hunter, who had commenced his career in London as an assistant to Dr. James Douglas, and became afterwards an eminent teacher of Anatomy himself.* Dr. John Hunter, the younger brother, rose to equal eminence as a public lecturer, and both brothers acquired great celebrity, by the splendid museums which they formed. The second part of Dr. John Hunter's work on teeth, containing an account of the diseases to which they are subject, appeared in 1778. Both works displayed great accuracy of research, and are highly valuable to the practical dentist. His work on Syphilis, was published in 1786, and however severely criticized on its first appearance, both in point of theory and practice, will ever remain a monument of his sagacity and observation. Dr. Hunter died suddenly, while in the act of turning round to speak to one of the physicians at St. George's Hospital, on the 16th of October, 1793, of a paroxysm of angina pectoris, a complaint to which he had been for some years subject, in the sixty-sixth year of his age. His heart was found, on dissection, to be the chief seat of disease: it appeared reduced in size, the coronary arteries were completely ossified, and ossification had commenced in the valves. Equally industrious and persevering with his elder brother,

* Among other pupils who attended the lectures of this distinguished teacher, was the celebrated Dr. Edward Jenner, to whom humanity is so deeply indebted for diffusing the practice of vaccination.

John appears to have considerably surpassed him in originality of genius, and powers of investigation; and his general character fully justified the opinion pronounced by Lavater on seeing his portrait, painted by Sir Joshua Reynolds, "This man thinks for himself."

William Cruikshank, a celebrated Anatomist, who was born at Edinburgh in 1746, and for many years filled the post of librarian to the late Dr. William Hunter, and afterwards became his assistant lecturer, published in 1786, his *Anatomy of the absorbents*,* in which he described the structure and situation of the valvular lymphatic absorbents. His situation with Dr. Hunter afforded an ample field for the display of his abilities, and his assiduity being fully equal to his skill, he contributed largely to enrich Dr. Hunter's splendid museum, by his beautiful preparations, and especially by his curious injections of the lymphatics. In 1795 he communicated to the Royal Society, a valuable paper, on the regeneration of the nerves, which will be found in the philosophical transactions of that year; in the same year he published a pamphlet on insensible perspiration; and two years after, an account of the appearances in the ovaria of rabbits, at different stages of their pregnancy. But his work on the absorbents is that which will perpetuate his name, being indisputably the most correct and valuable which we

* *Anatomy of the absorbent vessels of the human body.* London, 1786.

have upon the subject. Cruickshank died on the 27th of June, 1800.

A posthumous work in Latin on the fracture of the patella and olecranon, by the late Peter Camper, enriched with cases, illustrations from, and references to a variety of authors, was published in 1789, in quarto, by his son Adrian Gilles Camper, at the Hague, accompanied by two plates, which are but indifferently executed, and in the last of which a representation is given of what is called a perfect cure of a fractured patella, although the two portions of the bone remained separated by an interval of not less than four inches.

Although our contracted limits have compelled the omission of many names and publications which justly claimed insertion, it would be unpardonable to pass without some notice the splendid and accurate work on the gravid uterus,* which was left incomplete, at the time of his death in March 1783, by the late Dr. William Hunter. This magnificent work, in which all the principal changes which occur during the nine months of pregnancy, are exhibited in a degree of perfection never before attained, in a series of thirty-four folio plates, executed from drawings of subjects and preparations made by the first artists, first appeared in 1775, and contained the first representation of the retroverted uterus, and the *membrana desidua reflexa*, discovered by the au-

* The Anatomy of the gravid uterus. London, 1775.

thor. He did not, however, live to complete the anatomical description of the figures, which his nephew, the late eminent Dr. Baillie, at length did in 1794, when he published this long desired work.*

The last anatomical work which our limits permit of being noticed, is the excellent system of Anatomy in four volumes,† published by that distinguished Surgeon and Anatomist, John Bell. This work exhibits the most complete and comprehensive view of the progress and of the discoveries in Anatomy up to the period of its publication. Only the two first of these volumes belong to the eighteenth century, of which the first, published in 1793, contains the asteology, and myology; the second containing the anatomy of the heart and arteries, appeared in 1797. These, and the two remaining volumes, are of too well known merit, to require commendation here.

Having now reached the close of the History of Medicine, Surgery, and Anatomy, from the creation of the world to the commencement of the nineteenth century, and endeavoured to exhibit as fully and as faithfully as the scanty sources of information within our reach would permit, the progressive development of the human fa-

* Anatomical description of the gravid uterus and its contents, London, 1794.

† Anatomy of the Human Body. vol. i. Anatomy of the bones, muscles, and joints. Edinburgh, 1793. vol. ii. Anatomy of the heart and arteries. Edinburgh, 1797. vol. iii. containing the nervous system, London, 1803, vol. iv. containing the abdominal viscera, &c. London, 1804, all in large octavo.

culties, with the occasional interruptions and fluctuations which it experienced in proportion as the human mind was left more or less free from the shackles of arbitrary power or spiritual despotism, we may, we trust, be permitted without reproach to lay down our weary pen without entering upon the vast, although tempting fields of botany, chemistry, and pharmacy, which spread in smiling, but in almost endless, perspective beyond our view. Gladly would we cull a wreath from the lovely garden of the Swedish sage to grace the brows of Harvey; or pluck a gem from the ample stores of our regretted Davy, to lend an attraction to the uninviting pages of our own arid, but far from barren history. But, both botany and chemistry, during the eighteenth century, attained to a magnitude and importance which forbids their being longer treated as the handmaids of medicine. They call for the labours of a distinct historian.

THE END.

LONDON;

PRINTED BY G. SCHULZE, 13, POLAND STREET.

